



# NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

**Management marriage**  
BMC and its CEO Max Watson plunk down \$900M for competitor Boole & Babbage. *Page 25.*



**1998 SERVICE & SUPPORT SURVEY**  
**Data Network Services**  
**Keep at it, carriers**



The second installment of our Service and Support Survey shows carriers have room for improvement — none achieved Honor Roll status for their data service support efforts. Inside, see how your carriers fared.

Page 50.

## Extreme packs big punch in desktop switch

By Jeff Caruso  
Cupertino, Calif.

Desktop switches have begun to take on features usually reserved for high-end chassis systems, and the trend will continue this week as Extreme Networks unveils the Summit24 switch.

Less expensive than chassis and more powerful than conventional desktop switches, the new category of switches has been gaining popularity over the past year. For example, Bay

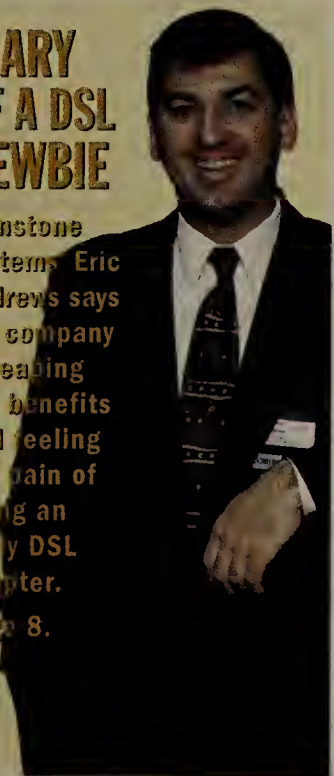
See *Extreme*, page 74

### DIARY OF A DSL NEWBIE

Turnstone Systems' Eric Andrews says his company is reaping the benefits and feeling the pain of being an early DSL adopter.

Page 8.

JEFF GARTIN



## MCI WorldCom's frame net face lift

By Denise Pappalardo, Tim Greene and David Rohde

If you are an MCI WorldCom frame relay customer, brace yourself for what could amount to a monumental change.

MCI WorldCom is close to signing a \$50 million deal with Ascend Communications for nearly 70 Ascend CBX 500 switches that will be used to give MCI's 100,000-port

HyperStream frame relay network a face lift.

While neither MCI WorldCom nor Ascend would officially comment on the deal, sources say the carrier will be adding the Ascend gear in the

frame relay backbone. Until now, the backbone has been primarily based on Bay Networks' BayStream devices.

Nortel Networks, which acquired Bay a few months ago, See *MCI WorldCom*, page 73

Get more **online** • A look at the Ascend gear that MCI WorldCom is buying, and news about other frame relay carriers. **9 2 4 1**

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## IBM to charge for QoS patents

By Sandra Gittlen

IBM raised industry eyebrows last week by telling the IETF that the company will charge licensing fees for pending patents that pertain to the Multi-protocol Label Switching quality-of-service (QoS) specification.

By requiring other vendors to license technology, IBM could slow deployment of MPLS and drive up MPLS equipment prices.

IBM's move could also reduce the benefits of the specification because developers might choose not to implement IBM's technology if they have to pay for it.

Additionally, IBM's action could lead to nonstandard implementations of MPLS, thus defeating the specification's overall purpose.

MPLS defines a standard way to steer IP traffic through the Internet over predefined routes, providing predictable performance, and thereby helping to guarantee IP QoS.

"The [Internet Engineering Task Force] will have to get used to patented technology," says John Tavs, TCP/IP technology manager for IBM in

Research Triangle Park, N.C.

"As long as patents are legal in the U.S. and networks are important to business, then patents will play an important role in the standards process.

See *MPLS*, page 74

### A QUESTION OF QoS

New special interest groups are meeting this week to hash out IP QoS issues. **PAGE 8.**

## Linux cynics

*Freeware OS may be hot, but skeptics abound.*

By Paul McNamara and Christine Burns

Not everyone is clamoring for a seat on the Linux bandwagon these days, even though a mounting drumbeat of vendor and press hype sure makes it seem that way.

You might call the resisters Linux cynics, or perhaps more precisely, Linux skeptics. Either way, many would-be Linux users and vendor supporters have a hard time envisioning the wide deployment of the popular shareware operating system in corporate networks, despite recent professions of faith

from industry heavyweights such as Oracle, Intel, IBM and Netscape.

As for the ultimate dream of the most fervent Linux disciples — to topple Windows NT — the skeptics generally scoff at the notion and accuse the zealots of putting Microsoft-bashing ahead of their better business sense.

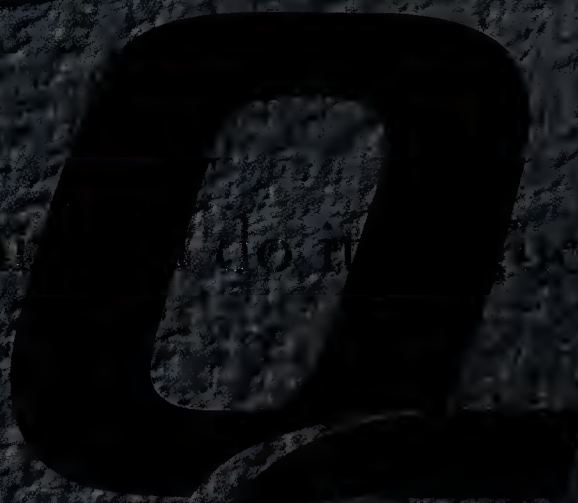
It's not that the skeptics don't like Linux (pronounced "lynn-uks"). Most everyone who has deployed or tinkered with Linus Torvalds' 7-year-old Unix descendant speaks highly

See *Linux*, page 76



The Linux mascot





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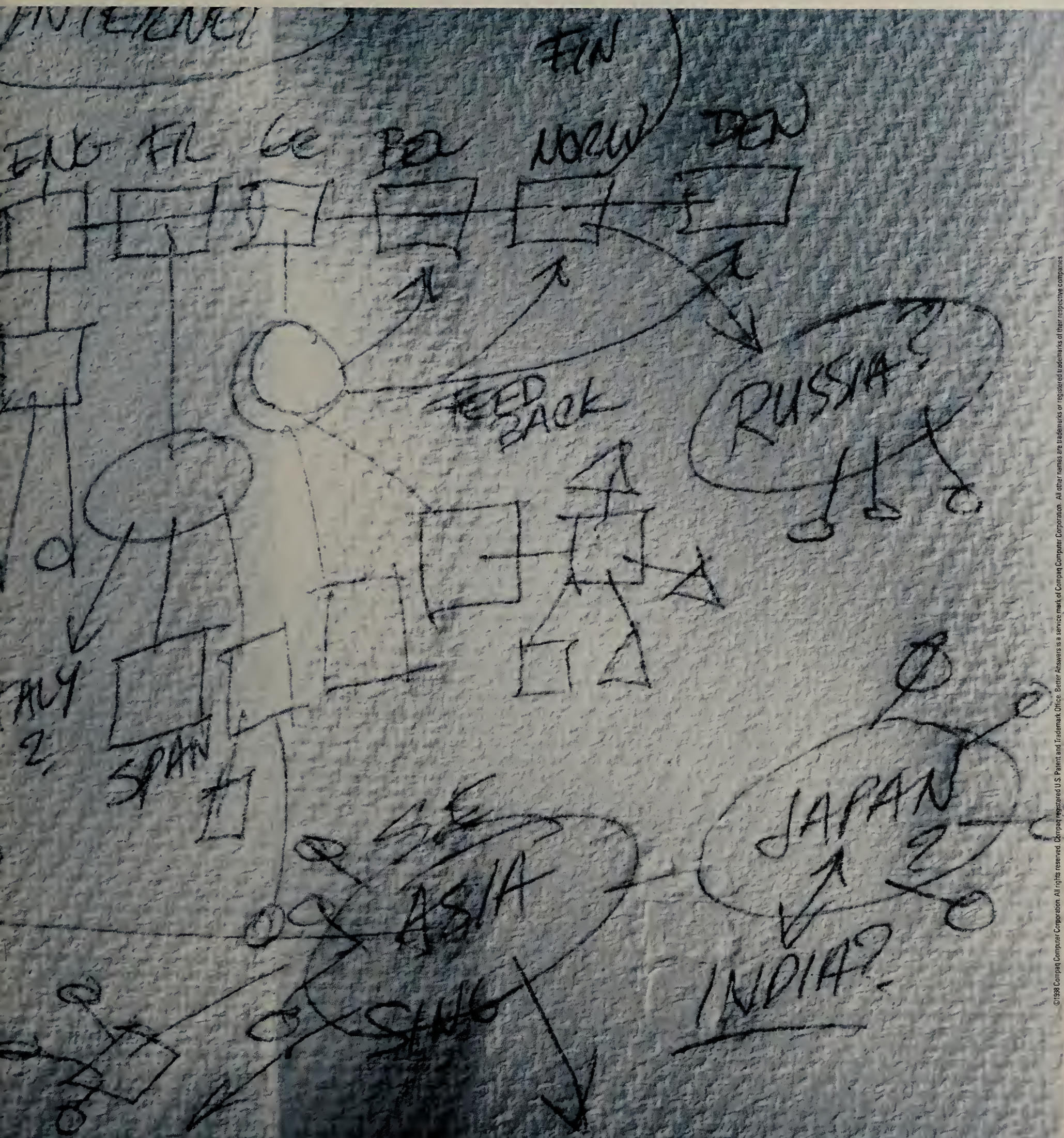
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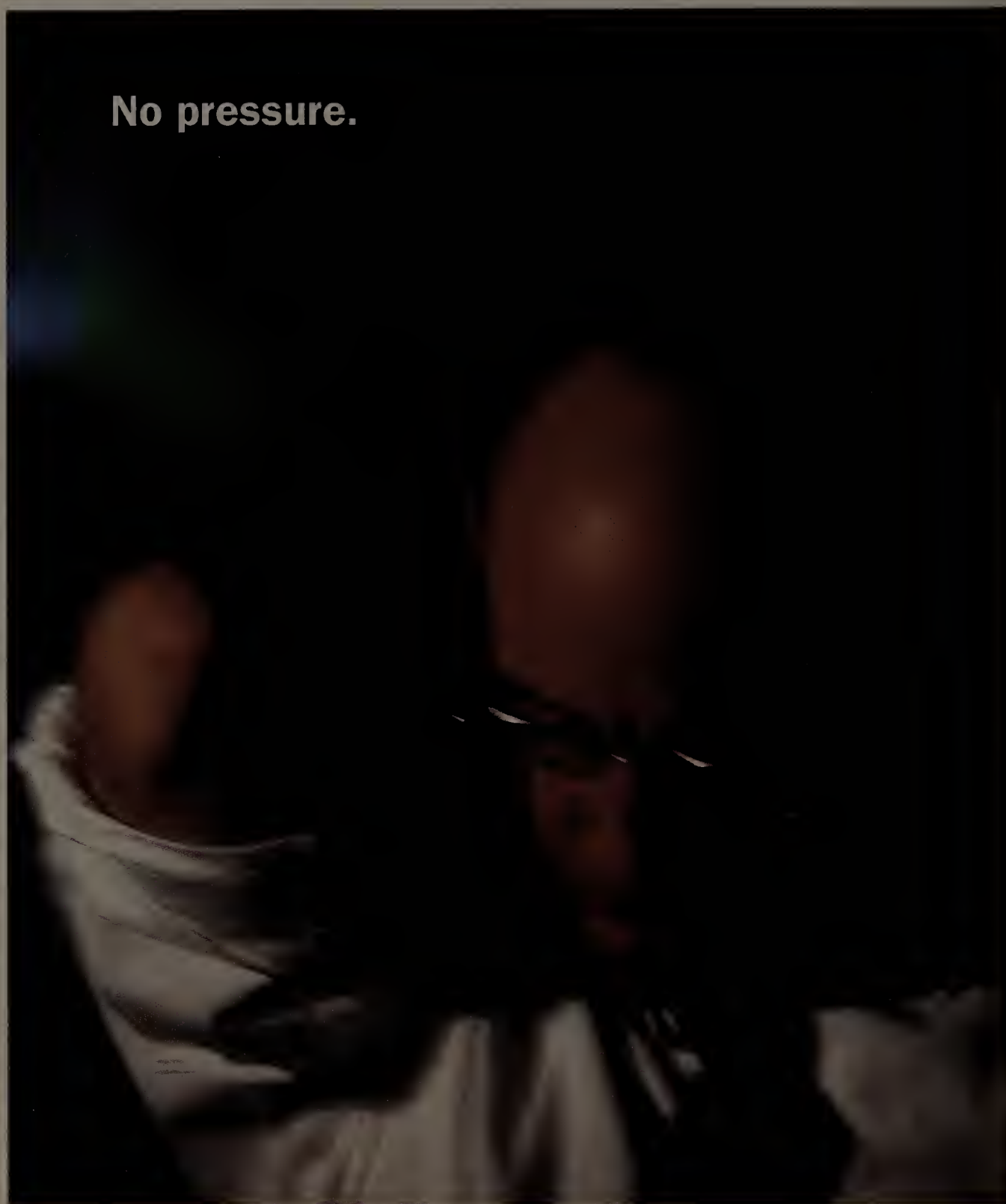


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## NETWORK BUGS

One customer's tangle with fiber-eating crickets. Page 25.

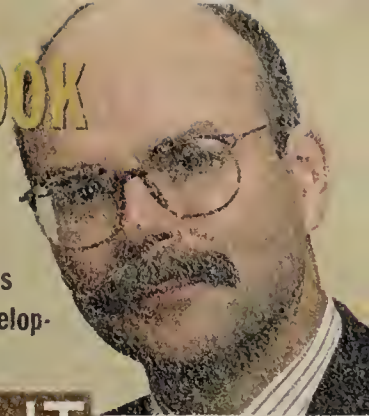
## BRUSHING UP ON BLUETOOTH

Momentum is growing for Bluetooth, a new wireless technology for linking cellular phones, laptop PCs and other devices. Page 33.



## THE NEW LOOK OF UNIX

Intel's John Miner says his company is fully behind SCO's "Project Monterey" Unix development effort. Page 19.



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**REVIEW:** In a battle of network adapter load-balancing tools, NSI Software's Balance Suite bests IPMetrics' NIC Express. Page 55.

## FIND IT ON FUSION

To quickly get to any online info referenced in *Network World*, enter its DocFinder number in the input box on the home page.



**NetworkWorld Fusion**  
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## This Week

### Only on Fusion

**Groupware.** What'll it take to convince Lotus to port Domino 5 to NetWare? A user with Notes and NetWare doesn't want to lose either but is worried about Lotus' plans. Jump into the discussion. **DocFinder: 9244**



**Storage.** Editor John Dix visits EMC and comes away impressed with its vision for a 21st-century storage network, and finds a new mantra: No more data islands! **DocFinder: 9245**

**Carriers.** Get complete results online from our user Service and Support Survey (p. 50). **DocFinder: 9231**

**DSL.** Want to get up to speed on the various DSL flavors? Come online for our DSL Net Resources page with links to primers and news. **DocFinder: 9246**

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## News briefs, November 9, 1998

**NetWare as middleware?**

■ Novell plans to peddle NetWare as middleware this week at Oracle OpenWorld in San Francisco. Novell, which already ships a free five-user edition of the Oracle8 database with NetWare 5, will discuss an expanded relationship with Oracle. In addition, Novell will detail plans to add open database connectivity hooks to NetWare via Netscape's FastTrack Web server technology. Also, Novell will demonstrate several database-intensive electronic applications running on NetWare 5.

**Hear the one about the Microsoft salesman?**

■ Sun CEO Scott McNealy did not depart from his typical anti-Microsoft banter during his keynote address last week to the assembled crowd at NetWorld+Interop in Paris. He opened with a new one-liner about Microsoft's new advertising slogan: "Microsoft is now talking about the digital nervous system. I guess I would be nervous if my system was built on their technology, too," he quipped.

McNealy then waded into the legal case against Microsoft by saying: "Janet Reno and Joel Klein have one heck of a case against Microsoft that's going to make the Nixon tapes and Clinton video look tame."



McNealy knocks 'em dead.

**AT&T on the attack**

■ AT&T last week attacked Bell Atlantic's claims that the regional carrier will soon have the New York State Public Utilities Commission's (PUC) backing for its bid to enter the long-distance market in the state. While Bell Atlantic says it has almost completed the testing required by the PUC, AT&T says the testing has a long way to go and that the PUC likely won't be able to make a decision on Bell Atlantic's long-distance bid until well into 1999. Bell Atlantic hopes to be the first regional Bell operating company to win entry into the long-distance market and plans to file with the FCC for approval by year-end.

**It's the end of the world as we know it . . . not**

■ A mid-November meteor storm probably will not short-circuit telecommunications satellites, but many satellites will be reoriented just in case.

On Nov. 17 and 18, the Earth's orbit around the Sun will carry the planet through the Leonid meteor shower. Meteors can be sand-grain-sized particles, but because they travel so fast, up to 71 kilometers per second, the particles could cripple a satellite. Within an area of a couple of miles wide, the odds of a satellite being hit are the same as "the odds of a pea hitting something the size of the house," experts say. Still, many commercial and scientific satellites will be rotated so that their vulnerable parts, including antennas and solar panels, are turned away from Leonid.

**Cisco keeps its streak alive**

■ Cisco continued to look unstoppable last week when it reported its 35th consecutive quarter of revenue and earnings growth. Citing strong sales of its Internet network equipment, Cisco posted first-quarter revenue of \$2.59 billion, a jump of 38% over the same period a year ago.

**That secure feeling**

■ IBM and Intel joined forces last week to promote Intel's Common Data Security Architecture (CDSA) specifications, which define how to build Web security technology into a variety of applications. IBM intends to embed CDSA in a new package called KeyWorks, which will be included in future versions of the company's AIX, OS/390 and OS/400 operating systems as well as in Microsoft's Windows NT.

# Siemens, Ericsson ready to buy?

By Jim Duffy and Chris Nerney

Telecommunications giants Siemens AG and LM Ericsson appear to be ready to make their moves — via the acquisition route — into high-speed routing for Internet telephony.

Siemens is reportedly looking to buy gigabit router start-up Argon Networks of Littleton, Mass., and Internet access router maker Assured Access of Milpitas, Calif. Both companies' products are targeted at ISPs.

Ericsson is reportedly eyeing Torrent Networking Technologies of Silver Spring, Md., for about \$400 million. Torrent's IP9000 router was initially targeted at enterprise customers, but Torrent has refocused the router for ISP points of presence.

Spokespeople at Argon, Assured Access and Torrent declined comment. Siemens and Ericsson representatives did not return phone calls by press time.

The deals would give Siemens and Ericsson some leverage in the burgeoning IP convergence market. Sales of high-speed data network equipment to service providers are taking off as the Internet and private IP data networks become the infrastructure for new multimedia applications.

Argon's product is the GigaPacket Node, a router that combines IP and ATM to let service providers provision virtual private network services to businesses. The device scales from 20G bit/sec to 160G bit/sec in non-blocking mode.

Assured Access' dial access concentrators enable ISPs to handle hundreds of Internet access calls from end users. They support channelized T-3, T-1/E-1 and fractional T-1/E-1, and Primary Rate ISDN access. They also support from 84 to 210 Ethernet ports, 12 to 30 Fast Ethernet and multiple routing protocols.

Torrent's IP9000 router is available in an eight-slot, 10G bit/sec configuration or a 16-slot, 20G bit/sec option. The IP 9000 can support 128 Fast Ethernet interfaces in its maximum configuration.

Voice network giants such as Siemens, Ericsson, Lucent and Nortel Networks are rapidly gobbling up data network companies to meet service provider requirements for high-speed data networking gear, and to better compete with Cisco, the leading supplier of data equipment for the Internet.

Siemens reportedly allocated more than \$1 billion at the start of its fiscal year in October to

acquire U.S. network companies, one source says.

The German technology giant is looking at a number of router vendors, and reportedly has hired an executive to oversee its American acquisitions, according to the source.

"The Siemenses, Nokias and other overseas companies have been busy in Silicon Valley, and I think they're establishing some solid relationships and making some smart investments," says David Helfrich, general partner at Communications Ventures, a Palo Alto, Calif., venture capital firm.

Helfrich says these companies have paid attention to Cisco's successful strategy of acquiring innovative technology companies and are emulating it.

To date, Nortel has spent roughly \$9 billion to acquire Bay Networks, Cisco's long-time rival in IP routing. Lucent has acquired smaller companies, such as Gigabit Ethernet start-up Prominet and remote access router company Livingston, but the company is expected to make a bigger, more significant purchase soon.

Cisco, meanwhile, has been swallowing smaller voice network companies, such as Selsius Systems and Summa Four. ■

## Microsoft wants piece of wireless data market

By Elinor Mills

Microsoft and Qualcomm are looking to spark future large-scale implementations of wireless data networks with a new joint venture.

Sources close to the companies confirmed that the joint venture, expected to be announced this week, will develop smart phones based on Qualcomm's Code Division Multiple Access wireless technology and a version of the Windows CE platform.

Microsoft's Windows CE operating system has been considered too large for use in telephones and handheld devices, analysts say. But Microsoft is working on a "slimmed-down version" of Windows CE for the mobile phone market, according to an analyst who asked not to be identified.

The Microsoft-Qualcomm

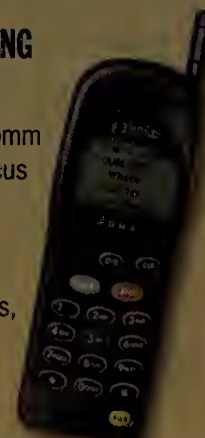
venture could go head-to-head with another wireless concern: Symbian. In June, Nokia, Ericsson and Psion formed Symbian to develop Psion's Epoc 32 operating system and

"Symbian took the tack that they were trying to kill any Windows CE threat before it came along," says Jill House, an analyst with International Data Corp. "But Windows CE is kind of behind, and there are questions as to whether it is small enough to go into a phone."

Earlier this year, Qualcomm announced it was licensing 3Com's Palm Computing operating system, and in September the firm said it was testing its pdQ smart phone running the Palm OS. The system offers Internet and e-mail access.

**MICROSOFT IS GOING WIRELESS**

The Microsoft-Qualcomm joint venture will focus on porting a new, smaller version of Windows CE to Qualcomm handsets, such as the QCP 2700 portable phone.



license it to manufacturers of smart phones and handheld communicators. Motorola is now part of Symbian (NW, Nov. 2, page 6).

Senior editor Denise Pappalardo contributed to this story. Mills is a correspondent with IDG News Service's San Francisco bureau.





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# A sprinkling of early DSL experiences

*Turnstone Systems tells its tales — some good, some bizarre — of using the high-speed service.*

By Tim Greene

Mountain View, Calif.

As an early digital subscriber line (DSL) service customer, Turnstone Systems is already enjoying the technology's promised benefits: inexpensive, high-bandwidth access from engineers' homes into the corporate network . . . and integrated phones and sprinkler systems?

Well, the phone/sprinkler system situation was a bit of a surprise, but the telephone company equipment maker says it went into the DSL sign-up process knowing that with such a new network service it

would need to take the good with the bad.

On the whole, the benefits of being an early DSL adopter have outweighed the assorted installation snafus experienced to date, says Eric Andrews, Turnstone's vice president of marketing.

He says engineers linked to the corporate network via 384K bit/sec DSL connections work more efficiently than they could over slower dial-up lines. And because the connection requires no dialing or call setup, the engineers are more willing to work nights and weekends from

home, he says.

At \$125 per month per remote user, DSL service costs more than analog dial-up lines, but Andrews says Turnstone makes up for the additional expense in the extra hours logged by the engineers.

Then again, Andrews does not sugarcoat his DSL experiences. There have been plenty of mixups, he says.

This is the way the installation process is supposed to work: Turnstone calls DSL provider Covad and orders new lines to handle the high-speed dedicated service. Covad con-

tacts Pacific Bell to get the local phone company to set up the lines between the Turnstone engineers' homes and the PacBell switching office.

From there, Covad takes over and connects the lines to Turnstone's corporate headquarters. Then Covad technicians hook up the engineers' PCs to DSL routers and connect the routers to the phone lines.

But the installations didn't always go as planned. In the case of the lawn sprinkler, the PacBell technician who installed the new DSL phone wires also disconnected the wires to the guest room phone and apparently reattached them to the timer for the lawn sprinkler, Andrews says.

The engineer who owned the house noticed the phone was dead and the sprinkler system switched on whenever he lifted the receiver on that phone, Andrews says.

While the sprinkler episode has been the most remarkable foul-up to date, Turnstone says that existing phone service has been disrupted more than one

third of the time when a DSL line has been installed. The cause? PacBell sometimes disconnects one end of the existing phone line, either at the customer's home or in the phone company switching office, Andrews says.



Turnstone's Andrews waited weeks for DSL.

Turnstone has also found that about half the time, it takes more than one try to get the DSL line working. In cases in which the line didn't work right away, it has taken an average of four weeks to resolve the problem. It took nine weeks for the prob-

lem to be resolved at Andrews' home, he says.

The average time technicians spent at customers' homes was 2.7 hours, and each installation required an average of two visits from PacBell and 1.6 visits from Covad.

"These figures were rather alarming, but we have heard similar statistics from other service providers," Andrews says.

In Andrews' case, the Covad technician checked the router, examined the phone wiring in the house and looked at Andrews' PC, all of which worked.

But the technician still couldn't set up the service, so he drove back to the PacBell switching office to run a tone over the line to see if the circuit worked. It didn't.

That meant getting PacBell to set up the line again, which took weeks.

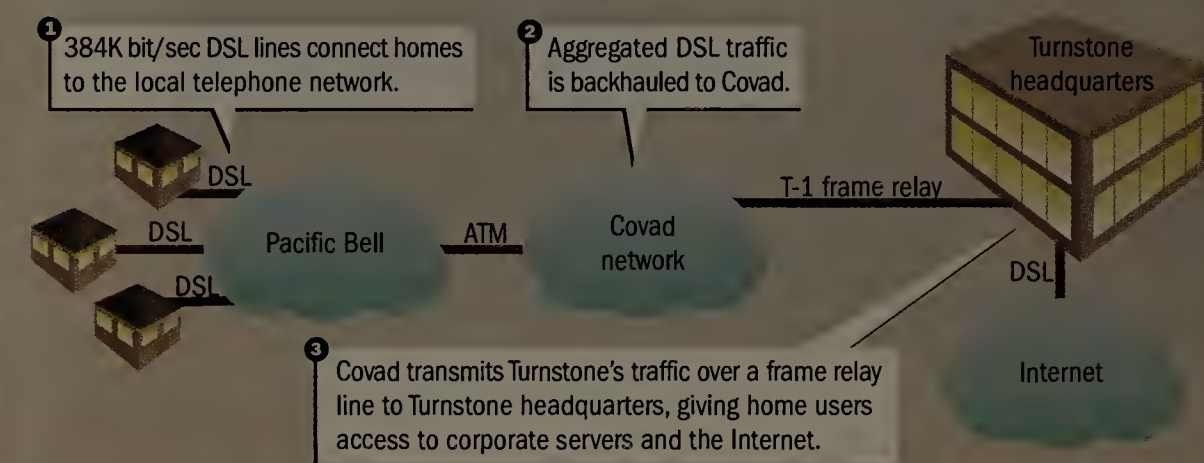
When Covad tried a second time to set up the service, the line was still dead. Finally, on the third try, after six service calls to his house, Andrews got his DSL line.

That kind of problem arises because two companies are involved in setting up the service, and current technology does not allow for easy testing of circuits from the customer end, he says.

"In an ideal world, DSL installation should be a simple single visit from the service provider. Understand that there are a lot of kinks to be worked out," Andrews says. ■

## DSL TO THE RESCUE

Turnstone set up a DSL network to give high-speed access to engineers working at home.



## Groups form to address QoS issues

By Denise Pappalardo

Two consortiums meeting this week for the first time have different agendas, but a similar goal: finding a way to best implement IP quality of service (QoS) in high-bandwidth networks.

The groups — the QoS Alliance and the QoS Forum — will look to develop roadmaps for IP QoS on the LAN and across the Internet, respectively. As users deploy more bandwidth and time-sensitive applications, QoS, which includes reliability and predictability, is becoming more important. The two groups hope to drive new and existing QoS technologies into users' backbones faster.

Specifically, the QoS Alliance is meeting in Albuquerque, N.M., to hash out its plan to develop a Layer 2 QoS standard for LANs. The group, which is tied to the IEEE 802 project,

consists of relatively unknown players: telecom switching vendor Fujitsu-Nexion; Escalate Networks, which makes Ethernet and DSL access equipment; and Vertex Communications,

Alliance. Users need to have some sort of mechanism that will moderate traffic flows based on traffic type or IP address, he says. These mechanisms will be the basis of the QoS Alliance's

### Could QoS get easier?

Two new groups are coming together to develop guidelines that will boost LAN and WAN quality of service. Here are the initial participants in each of the groups:

#### QoS Forum:

- Cisco
- IBM
- IP Highway
- Netcom
- Orchestream
- Ukiah Software

#### QoS Alliance:

- Fujitsu-Nexion
- Escalate
- Vertex

maker of wireless access devices.

Because existing flow control systems do not discern between different types of traffic, it's difficult to give time-sensitive traffic, such as voice, any type of priority, says Colin Mick, executive director of the QoS

Layer 2 QoS standard.

There will be some coordination and discussion between the IEEE's QoS Alliance and the Internet Engineering Task Force (IETF), Mick says. But any recommendations the group makes could be implemented in

vendor products without the blessing of the IETF.

While the QoS Alliance is working on developing standards, the QoS Forum is not. The goal of the QoS Forum, which is meeting in San Jose, Calif., is to bring vendors together to talk about how to make more sense out of existing and pending IETF standards, says Martin Hall, chief technical officer at Stardust Forums and the QoS Forum organizer.

Some of the IETF specifications the group will be discussing include the Resource Reservation Protocol and Differentiated Services. The QoS Forum's list of supporting vendors includes industry heavy hitters such as IBM and Cisco (see graphic).

For more information on the QoS Alliance, see [www.qosalliance.org](http://www.qosalliance.org). For more information on the QoS Forum, see [www.stardust.com/qosforum](http://www.stardust.com/qosforum). ■

For columnist Scott Bradner's take on DSL, see page 41.

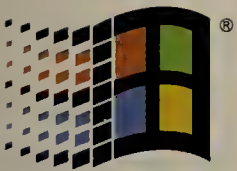


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As you make your server OS decision, know that companies are choosing Windows NT Server because it handles basic networking and the ever-changing needs of today's business environment.





# Sybase chief jumps ship

*Mitchell Kertzman to lead network appliance software vendor NCI.*

By John Cox

Redwood Shores, Calif.

Sybase Chairman Mitchell Kertzman last week stunned the industry by taking the reins of a software company originally founded by archrival Oracle.

The charismatic Kertzman will formally take over next week as president and CEO of Network Computer, Inc. (NCI), a quiet company that he'll try to turn into a force in the burgeoning market for information appliance software.

Network appliances include handheld computers and assorted other devices characterized by low prices, ease of use and IP connectivity. Industry observers expect the devices to play a big role in

fluence and dominate the growth of the appliance market," he says.

Industry watchers say Kertzman's hiring is a coup for NCI.

"He's a pugnacious, aggressive fellow who has a take-no-prisoners attitude," says Greg Blatnik, vice president of Zona Research, a Redwood City, Calif., market research company. "Mitchell's hire is a clear indication that NCI wants to have its own identity."

NCI is now separate from Oracle, though the database vendor remains a major investor in the privately held company, along with Netscape Communications and NCI employees.

NCI began struggling not

several major overseas cable providers, including Cable & Wireless and Belgacom SA, choosing NCI software for new services being deployed via TV set-top boxes.

With Kertzman in charge of day-to-day operations, Roux has reclaimed his old post of NCI chairman, and retains his job as vice president of development at Oracle.

## Sybase on the mend

Kertzman's parting from Sybase seems to have been amicable. Sybase President and CEO John Chen, whom Kertzman hired in August 1997 to run the company on a day-to-day basis, has been elected chairman of the database company.

Between them, Chen and

# Novell enters high-end services marketplace

*Offerings link directory technology, ERP programs.*

By Christine Burns

Novell is testing the waters of the lucrative high-end systems integration services business.

The company last week announced NDS Integration — a compilation of technology and customized integration services that synchronizes a Novell Directory Services (NDS) database with any PeopleSoft enterprise resource planning (ERP) applications. NDS Integration will only be available through Novell's Consulting Services arm.

By integrating NDS and PeopleSoft, network administrators will not have to maintain redundant employee directories and will have fewer passwords to manage. Additionally, the service lets end users maintain their personal employee records, which reduces the cost of database administration.

With this level of integration, an NDS user account is automatically created on the network when a new employee is added to the PeopleSoft system. The system then automatically provides access to generally available network resources, such as applications, printers and servers, without requiring net administrator assistance.

The move into the systems integration arena is a big leap for Novell. In the past, the company's technical and consulting services have been strictly limited to planning for and installing its own products.

Industry observers note that a foray into the services business is a necessary step in Novell's plan to push NDS as the connecting point for all networked resources, hardware and enterprise applications.

"A lot of shops would like an integrated directory, but they don't know where to start," says Jon Oltsik, an analyst with Forrester Research Group in Cambridge, Mass.

"Novell has an opportunity to use NDS as a lever into the world of directory enabling enterprise applications," Oltsik says.

Novell is planning to offer similar high-end integration

services for other ERP installations, such as those based on SAP programs and customized database applications built on Oracle's Oracle8 databases, says Greg Hudson, vice president of Novell's Consulting Services.

But Hudson contends that this move toward services does not mean Novell has any intention of shutting out its tradi-

*"A lot of shops would like an integrated directory, but they don't know where to start."*

Jon Oltsik, analyst,  
Forrester Research Group

tional channel partners from large corporate accounts.

"We are looking at a full circle of services that will definitely include our channel partners," Hudson says. "We are the directory experts. We will still need the channel to help us with all the technologies that Novell doesn't have all the answers for."

Users are generally confident Novell will be able to become a formidable player as a services provider. They did express some concerns about the price tag for these new service offerings. For a 5,000-node network, NDS Integration for PeopleSoft has a base price of \$40,000, with additional per-user and consulting fees tacked on top of that.

"Considering we're used to paying a lot less for Novell products and channel support, Novell's got a lot of explaining to do to justify that cost," says Steven H. Jones, IS manager for the city of Glendale, Ariz.

Jones beta-tested NDS Integration for PeopleSoft on his 1,200-node, 20-NetWare 4.11 server network.

Hudson defended the price of the technology/services offering by saying that \$40,000 is a drop in the bucket for enterprise firms that are paying upward of \$1 million for ERP applications.

© Novell Consulting Services: (801) 861-3467

## NCI MILESTONES

**May 1996:** Oracle forms Network Computer, Inc. to deliver software for network computers. Oracle veteran Jerry Baker is president; another veteran, David Roux, is chairman of the board.

**ORACLE**

**March 1997:** NCI releases its client/server suite of software for network computers.

**December 1997:** NCI releases first software for TV set-top boxes and similar devices.



**August 1997:** NCI and Netscape's Navio merge. Navio's software lets vendors blend television and Internet/Web services.

1996

1997

1998

**February 1998:** David Roux takes over as CEO.

**September 1998:** Belgacom starts rollout of new TV-based services using NCI software.

**March 1998:** Cable & Wireless says it will use NCI's software for its new broadband consumer services.

**October 1998:** Real-time software vendor Wind River Systems says it will incorporate latest NCI software in its real-time development tools and operating system.

**November 1998:** Former Sybase chairman Mitchell Kertzman becomes CEO; Roux goes back to chairman post.



Kertzman

SOURCE: NCI, REDWOOD SHORES, CALIF.

corporate networks in years to come.

## Back to his roots

Kertzman's new job recalls an earlier one, when he founded and headed up PowerSoft, a pioneer in the then brand-new market for client/server application development tools.

Kertzman says he accepted NCI's offer because he wants to oversee a young company in a potentially huge market. "NCI has the chance to in-

long after its May 1996 launch, as the original vision of network computers as low-cost, Java-based replacements for Wintel PCs never took off.

NCI's first chairman, David Roux, took over the CEO job from Jerry Baker in February 1998. Since then, Roux has focused on the consumer cable television market, especially overseas, making use of software that NCI acquired when it merged in August 1997 with Netscape's Navio subsidiary.

The focus has paid off, with

Kertzman staunching Sybase's red ink and directed the company into the fast-growing handheld and embedded systems markets.

Sybase's revenue for the third quarter, ended Sept. 30, was \$210 million, less than the \$233 million reported by the company for the same period last year.

But whereas the company reported a third-quarter net loss of \$6 million last year, this year it reported earnings of \$2.2 million. ■



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# HP reinforces management package

By Jeff Caruso  
Boston

Hewlett-Packard last week introduced a variety of tools which will help network managers watch more kinds of applications and servers.

Among the enhancements announced at the company's Channel Connections conference here was a new version of its OpenView ManageX systems management software that can manage Novell NetWare servers. This is in addition to the product's existing Windows NT management capabilities.

ManageX 4.0 is the first of HP's products to support the Common Information Model (CIM) standard for exchanging information with other network management applications.

The NetWare support allows network managers to view the basic health and status of NetWare servers from the same place they view those statistics for Windows NT servers.

HP also announced a plan to

help net managers deliver applications to end users. The anchor of HP's "Application Quality of Service" strategy is ServiceNavigator, new software that sits on top of the Unix IT/Operations console to provide information about how well enterprise applications are performing. The software de-

termines how lower level device failures in the network or in the end systems might affect the applications they support.

Through plug-in software modules, network managers can add to OpenView products performance management centered around particular applications, such as SAP R/3 and Oracle, and show response times for each of the applications.

The design of ManageX has made it easy to add new features, says Olivier Helleboid, general manager of HP's OpenView software business unit. As a result, HP has issued several major releases of the product over the past year since acquiring the product from NuView, Inc. in Houston.

ManageX watches system metrics such as CPU utilization and memory usage, as well as the performance of specific applications such as SAP R/3 and Baan. Network managers

can use IT/Operations as a console to run ManageX and network management software in the same place.

The improvements in Version 4.0 will address some lingering concerns users have. Since HP acquired ManageX, there have been worries about whether HP would support servers made by other vendors, or platforms other than NT, says Philip Mendoza, a systems management software analyst at International Data Corp. in Framingham, Mass.

The CIM and NetWare support establishes the software as a cross-platform package, Mendoza says.

ManageX is shipping now for \$795 per server. The ManageX 4.0 console, which includes the Microsoft Management Console, costs \$2,995.

In related news, HP announced it is working with MIL 3, Inc. to develop software for predicting network performance. The software

will automatically project the effect of network changes on performance. The product is based on MIL 3's Opnet Planner software and is expected to ship in the first quarter of next year.

© HP: (650) 857-1501

## Another day, another version

**Hewlett-Packard has been rapidly updating its OpenView ManageX management software for Windows NT, churning out several new versions over the past year.**

**Here's what's new in 4.0:**

- ▶ Support for NetWare.
- ▶ Support for importing and exporting data using the Common Information Model.
- ▶ Preconfigured reports for system metrics, such as CPU utilization and memory usage.
- ▶ Plug-ins tailored for SAP R/3 and Baan software.

# Cable & Wireless frame relay service focuses on SNA

*New managed offering tightly integrates IBM access gear with global network capabilities.*

By David Rohde  
London

Cable & Wireless is moving to solidify its newfound prominence in the enterprise network market with a global managed frame relay service.

Announced last week, the Cable & Wireless SNA Connect service is based on IBM WAN equipment that Cable & Wireless will offer to install at customer sites in 66 countries.

Despite the service's name, it will not simply carry SNA traffic, though its initial target was financial and shipping firms looking to integrate SNA into multiprotocol network architectures. The service potentially can carry any type of frame relay traffic. Users will have a choice of IBM routers, access concentrators and frame relay access devices.

Cable & Wireless will be the

customer's point of contact, but IBM Global Services will configure and maintain the equipment and provide additional consulting. Customers will pay for frame relay transport and a management fee.

The move broadens Cable & Wireless' service portfolio just as the company is obtaining a new base of customers. Cable & Wireless recently purchased MCI's Internet services division. Cable & Wireless officials say they are looking to provide users with an intermediate step away from legacy networks before they migrate to an all-IP infrastructure.

Giving users a way to obtain a common multiprotocol access platform via a managed service is even more important internationally than it is domestically, says frame relay specialist Steven Taylor, president of Distributed Networking Associates in Greensboro, N.C. "That way, most of the [international] incompatibilities are already taken care of," Taylor says.

This is IBM's third deal this year in which its products or consulting services have been

included in a major carrier's sales package.

In May, IBM inked a deal with Sprint to team up on SNA-over-frame relay consulting assignments. But that was strictly for domestic networks, says Rob Zimmer, IBM's general manager of service provider solutions. Shortly thereafter, IBM signed on as a partner to work on what is now MCI WorldCom's Enterprise Blue product suite, which also offers managed SNA over frame relay. But IBM's role was relegated to software, with the routers and frame relay access devices coming from Cisco.

A key difference between the Cable & Wireless and MCI WorldCom services could revolve around SNA encapsulation techniques, company officials say. The IBM gear in the Cable & Wireless networks supports the IETF's RFC 1490, which tags frame relay packets as SNA traffic. By contrast, the Cisco equipment utilizes Data Link Switching, a technique that encapsulates SNA datagrams in IP packets. ■

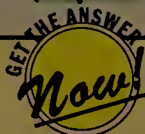
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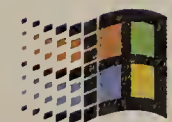




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Sources: US networked use and sales run rate: Sofres Intersearch Network Operating System Share Study, 1998. LAN administrator preference: ZO Market Intelligence, September, 1998. Most popular commercial Internet platform for self-hosted companies: Netcraft Web Server Survey, 10/98. Most popular intranet platform: Zona Research, Inc., "Internet and Intranet: 1998 Markets, Opportunities, and Trends."

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## THE MICROSOFT DIARIES

Week three

*The Microsoft-DOJ Trial*

## MONDAY, NOV. 2

In today's proceedings, CEO Gates was on the virtual hot seat as the government showed select snippets of Bill's videotaped deposition.

Appearing at times ill-at-ease and combative and at other times befuddled, Gates maintained that his company's talks last year with Apple were the brainchild of Steve Jobs, Apple founder and interim CEO. Under intense questioning from Department of Justice hired gun David Boies, Gates denied that the purpose for the powwow was to coerce Apple into giving preferential treatment to Internet Explorer on the Macintosh in exchange for Microsoft's continued development of Office for that platform.



Gates: On the virtual hot seat.

The feds said these denials fly in the face of several e-mail messages written and received by Gates. But then again, Gates said he couldn't recall sending or receiving any of those messages.

## TUESDAY, NOV. 3

No news is good news for Microsoft as court recesses for the day for federal and state elections.

## WEDNESDAY, NOV. 4

The government put Apple executive Avie Tevanian on the stand, and he refused to back down from his written testimony that Microsoft sabotaged his company's QuickTime multimedia player so it would not run on Windows. Tevanian said Microsoft introduced a number of bugs into Internet Explorer 4.0 that caused QuickTime to fail.

Microsoft attorney Ted Edelman repeatedly asked Tevanian whether he had any personal knowledge that Microsoft had set out to intentionally hurt QuickTime. "Don't you think that the use of the word 'sabotage' is something of an exaggeration?" Edelman inquired. Tevanian, pausing first, said evenly: "It sounds fine to me. What other goal could there have been other than to disadvantage QuickTime?"

"The self-serving complaints of one of Microsoft's competitors can't prove that Microsoft's actions have hurt consumers," a Redmond spokesman said after the gavel closed court for the day.

## THURSDAY, NOV. 5

Day Two for Tevanian, and this time he came armed to defend his assertions that Microsoft sought to divide the multimedia player market.

QuickTime was once a popular product, even though Apple hadn't figured out a business model for making money from it. Tevanian testified that in an August 1997 meeting he attended with other Apple and Microsoft officials, Apple's Peter Hoddie asked the Microsoft people, "Are you really asking us to kill playback? Do you want us to knife the baby?" According to Tevanian, Christopher Phillips, business development manager for Microsoft multimedia APIs and DirectX, replied: "Yes, we're talking about knifing the baby."

To get the judge's mind off the image of Microsoft killing babies, Microsoft attorney Edelman confronted Tevanian a series of slides from a 1996 meeting at Apple. The slides were titled "What to do about Microsoft." The presentation included a category called, "Why Microsoft needs us." Under that category were the initials "DOJ."

— Christine Burns

# Instant messaging aims for interoperability standard

*Vendors to push Presence Information Protocol to the IETF*

By Paul McNamara

A key limitation of the various products used to swap instant messages and to tell users if their colleagues are online is that the products do not work with one another.

Next month, however, an alliance of vendors intent on driving instant messaging and presence detection technology into corporate networks expects to get permission to establish a working group within the Internet Engineering Task Force. The group's goal will be to fashion an interoperability standard, dubbed Presence Information Protocol (PIP). The group could get the necessary go-ahead at the IETF meeting Dec. 7-11 in Orlando.

Spearheading the PIP effort are leading e-mail competitors Microsoft and Lotus, as well as Fujitsu, AT&T Labs and Activerse, whose instant messaging product Ding has already drawn a following by beating bigger names to market.

While these vendors and a host of others are building proprietary instant messaging and online presence monitoring capabilities into their products, customers and industry experts believe that only standardization will allow the technology to bloom in business environments. Consumers to date have been the biggest users of these products, which allow people already online to see who else is connected and to exchange brief text messages with them in real time.

"I consider interoperability very important," says Rick Combest of DAT Services, a Portland, Ore., trucking industry service provider that uses Ding. "I see presence software as a key piece of necessary infrastructure for many types of electronic commerce. This software can and will be used as a key delivery method for real-time pushed information."

John Dial, a product manager at BMC Software in Austin, Texas, says members of his workgroup use Ding "all the time to keep in touch with each other throughout the day."

While he can see the value in

making such products interoperable, Dial believes the security implications of allowing instant messages through firewalls "will be a huge sticking point." Well aware that others will share that view, those pushing the PIP standard expressly opted against

not monitor their online status.

"All the companies that are involved in this effort agree that online presence monitoring has to be on an 'ask-first' basis," says Kelly Looney, vice president of marketing at Activerse. "Nobody gets to know that you're online unless you give specific permission."

PIP proponents demonstrated early test implementations of their proposed standard at the recent NetWorld+Interop 98 show in Atlanta. According to Looney, "everybody's stuff worked."

With Ding already selling, and Lotus and Microsoft products expected to precede any formalization of PIP, it will be a long time before users with different products will be able to share messages.

"There are always benefits to being able to use these products internally, but the Internet is taking off because it allows you to seamlessly interact with people outside your organization as well," says Tim Sloane, an analyst with Boston-based Aberdeen Group. "The benefits of instant messaging are highly limited if it only works within a closed user group."

Customers should keep their expectations in check regarding the early attempts to make these products work with one another, according to Sloane.

"I think you can expect over time to see interoperability that is similar to e-mail," he says. However, that inevitably means sacrificing some advanced features, he adds. ■

## THE EMERGING PRESENCE INFORMATION PROTOCOL

### The players:

- Activerse
- Lotus
- AT&T Labs
- Microsoft
- Fujitsu

### Early goals:

- Allow basic presence information sharing among instant messaging products.
- Enable simple text messaging between products.
- Remain easy to understand and implement.

### Specifically omitted:

- Security issues
- Scalability and efficiency
- Rigorous specifications

bringing security issues into their initial effort.

What supporters are aiming for is basic interoperability for the sharing of online presence information and simple text messaging, while keeping mindful of the need to "remain easy to understand and implement."

PIP proponents are also unified in their desire to give users control over who may and may

## SPOTLIGHT SERIES

Getting your intranet off the ground can be rough. This week's Spotlight Series forum focuses on how to develop and maintain your company's intranet. **Elizabeth Chapin**, senior production director for *Wired Digital*, will be online all week to share her experiences with starting up *Wired's* intranet. She'll answer your questions about getting management buy-in, using the resources at your disposal and gathering support. So log on to Network World Fusion and let our expert help you.





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# Open Market to liven up Web-based publishing

*New Windows NT document management software extends copyrighted content to the Internet and intranets.*

By Ellen Messmer  
Burlington, Mass.

Open Market this week will unveil document-management server software that enables online publishers to make their copyrighted content available over the Internet on a subscription or per-use basis.

The Windows NT offering, dubbed LivePublish, is designed to extract content in its native format from a publisher's back-end databases for presentation to authorized viewers via Web browsers.

LivePublish works in conjunction with Netscape or Microsoft Web servers and existing document management systems.

"Most content providers already have systems, such as Documentum, PC Docs or SGML-based systems, to manage their published documents, and LivePublish lets content providers leverage these for Web-based publishing," says Marc Stamm, director of Open Market's commercial publishing division.

"LivePublish lets them take the content out of those existing systems, combine different assets and make content available on the Internet in native format," he says.

document container" indexed with a table of contents for each user or user group.

A set of APIs allows companies to connect a LivePublish server to back-end databases to

format-neutral Extensible Markup Language.

## Electronic commerce supported

LivePublish works with Open Market's Transact software to support electronic commerce transactions, such as subscription renewals and the levying of per-use charges.

Transact can process a credit card or handle the payment in other ways, such as by processing a business-to-business purchase order online, Stamm says.

Bookcraft, Inc.'s Infobases division has been beta-testing LivePublish.

Paul Hansen, Infobases' president, says the new Open Market server software works well technically and is among the most appropriate packages he's checked out for online publishing.

"We've had it up on the Web and people have been banging away at it," Hansen says.

"We had a quarter of a million page views that first week-end, and the software performed flawlessly. That's a

pretty robust beta," he says.

## Intranet option

An add-on module called SecurePublish enables LivePublish to serve as an intranet-based library for organizations that want to make copyrighted material available to readers under the publisher's express terms.

"Sometimes large corporations view site licenses for copyrighted works as too expensive," Open Market's Stamm says. "But they now have 'floating licenses' with online publishers that allow for 10 concurrent users for copyrighted works with time-based expirations."

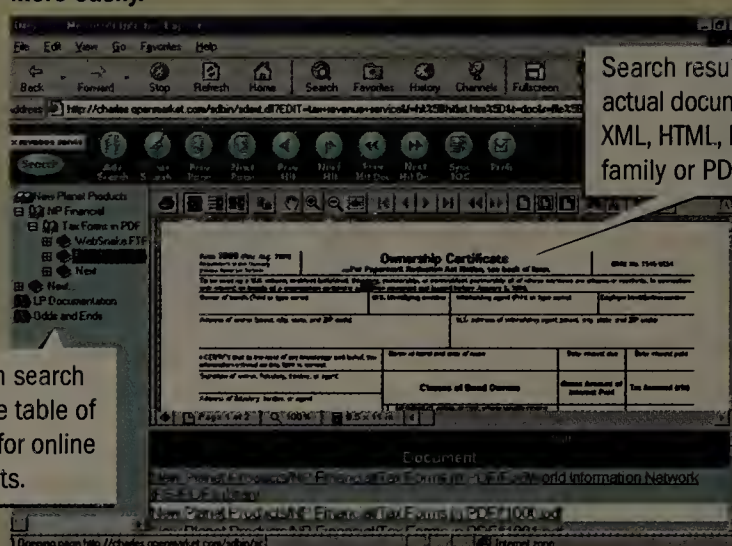
SecurePublish tracks session use and reports activity on a periodic basis to publishers via e-mail.

The LivePublish document-management software, expected to ship next month, starts at \$4,995 for a corporate intranet and \$9,995 for a commercial publisher's license. SecurePublish costs \$19,995.

© Open Market: (781) 359-7411

## EASY ACCESS

LivePublish's interface allows users to access online documents more easily.



Search results produce the actual document in its native XML, HTML, Microsoft Office family or PDF format.

Users can search interactive table of contents for online documents.

The LivePublish builder component lets companies organize content into what Open Market calls a "secure

extract content based on native formats such as HTML and Portable Definition Format, in addition to the

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## Briefs

■ **Control** has begun shipping its *RocketPort Serial Hub*, a device that lets companies support more fax machines, printers and other peripheral devices on their Windows NT networks. The hub can be used to **connect multiple peripherals** to a server, overcoming the lack of server peripheral connection slots and relieving the server CPU's workload. The



The **Control RocketPort Serial Hub** speeds serial connections for peripheral devices.

device can also connect directly to an Ethernet network, and a 100M bit/sec edition is planned for next year. An eight-port model costs \$995, and a four-port unit costs \$795.

© Control: (612) 631-7654

■ **IBM** last week announced an addition to its RS/6000 line of high-end **enterprise Unix servers**. The S70 Advanced model comes with up to 12 232-MHz PowerPC RS64-II chips and 32G bytes of memory. In addition, the server features hot-swappable redundant power supplies and fans. The S70 Advanced model starts at \$150,000.

© IBM: (800) 426-3333

■ **Axis Communications** has unveiled the *Axis 5400 and 5600 multiprotocol print servers*, which feature 10/100M bit/sec connections and can be managed via Web browsers using the company's ThinWizard technology. The servers work on networks running Windows NT and 95, NetWare and other popular operating systems. The *Axis 5400* attaches to a single printer and costs \$499.

The *Axis 5600* connects to as many as three printers and costs \$499.

© Axis: (617) 938-1188

## Monterey: Intel's premier Unix OS

By **Deni Connor**  
Somers, N.Y.

Intel's endorsement of The Santa Cruz Operation's UnixWare as the premier Unix operating system for Intel processors can only help solidify the place of Unix in users' future operating system plans.

Intel has blessed an initiative, dubbed Project Monterey, that will lead to several new versions of Unix.

The first is a flavor of SCO's UnixWare for 32-bit processors from IBM and Intel that incorporates IBM DB2 and MQSeries middleware and is currently available. Future releases of this version will add IBM's AIX operating system technology.

IBM also will take current UnixWare technology and incorporate it into future versions of AIX to create a second flavor of the Project Monterey platform.

The third Unix operating sys-

tem will be for Intel's IA-64 Merced processor, which is expected out in mid-2000. IBM



Intel's **John Miner** says Project Monterey is a major Unix effort.

and Intel have created a multi-million dollar fund to spur software development for this version of Unix.

"The net result is that this operating system is positioned to be the leading Unix operat-

ing system on the Intel architecture," says John Miner, vice president and general manager of Intel's Enterprise Server Group.

While SCO, IBM and Sequent are united behind this initiative, the biggest winners are users of Intel processors.

"Intel is billing this initiative as the premier Unix operating system environment to move to Merced," says Brad Day, senior analyst with Giga Information Group in Norwell, Mass. With Project Monterey, users will be able to choose from three versions of Unix, depending on the hardware architecture they have selected, and will have an increased variety of Unix software and applications.

Intel benefits from having "yet another operating system supplier pledge support for its platform," says James Gruener, senior analyst for NT servers at Aberdeen Group in Boston.

"IBM was one of the major

holdouts with AIX. By now coming forth with this software . . . there could be crossover from customers who eventually move from the RS/6000 to IA-64," Gruener says.

Whether users will see UnixWare as an alternative to Windows NT depends on several things, he says. "There is the timing involved when 64-bit UnixWare arrives vs. when 64-bit NT will be available.

The second issue is that customers have to choose whether they want a Unix environment based on IBM's legacy AIX or Microsoft's NT, which has larger independent software vendor support," Gruener says. Further, he says that Microsoft may not have the background in 64-bit technology that IBM research already has.

Project Monterey would be further strengthened by participation of other vendors, such as Compaq and Dell.

Subo Guha, director of product marketing for Dell's Enterprise Systems Group, says, "The good news is that a lot of the enterprise-class Unix versions have been on Reduced Instruction Set Computing boxes. This announcement is bringing more robust Unix features to the Intel architecture."

While Dell won't commit to one Unix architecture over another, it will continue to support Unix features that run on Intel architectures.

A number of software companies, including Netscape, the SAS Institute and Novell, have also committed to delivering applications for Unix on Merced. Among the hardware manufacturers that will use the new Unix software are Acer, Motorola Computer Group and Unisys Computer Systems. ■

## Compaq adds power to net server line

*ProLiant 6500 to house up to four Xeon processors, support Oracle clusters.*

By **Deni Connor**  
Houston

Recognizing that customers' applications are becoming more complex across the board, Compaq has announced more powerful versions of its data center, departmental and workgroup servers.

Customers can now buy Compaq ProLiant 6500 servers powered by up to four 400-MHz Pentium II Xeon processors. Up to six systems can be rack-mounted to provide up to 24 processors in a single rack.

Each server includes network adapters with failover capabilities as well as redundant controllers and hot-pluggable hard drives, power supplies and fans. The servers include up to six PCI slots and memory of up to 4G bytes. Pricing for a single-processor model starts at



Compaq's **ProLiant 6500** gets Xeon boost.

\$12,784.

Packing more powerful servers into a rack-mount configuration sounds good to Hall Kuff, manager of systems and networking for Tessco, a maker of wireless communications products in Hunt Valley, Md. "We won't buy anything you can't rack-mount. Rack-mount capability is non-negotiable in data centers like ours," Kuff says. "The ability to co-locate a large volume of servers for network connectivity, power and

management is an absolute in most production shops."

ProLiant 6500s can be purchased as part of a new Compaq Parallel Database Cluster/01000 offering, a product bundle that lets customers run Oracle database applications across clusters of up to six

Windows NT-based servers. Pricing starts at \$120,000 for a six-node cluster of ProLiant 6500 machines.

Also new on the server front, Compaq is now offering its ProLiant 3000 departmental server with up to two 400/450-MHz Pentium II processors. Like the ProLiant 6500, the 3000 can support up to 4G bytes of memory. Xeon editions of the 3000 should be out early next year, Compaq representatives say. Pricing for new versions of the 3000 starts at \$4,431.

Finally, Compaq has strengthened its low-end ProLiant 800 offering by announcing that it is now available with up to two 400/450-MHz Pentium II processors. The server features two PCI and four PCI/ISA slots, as well as a Netelligent 10/100M bit/sec Ethernet adapter. Pricing for the upgraded version starts at \$2,283.

© Compaq: (800) 888-5858

Get more online:

• **UnixWare specifications.**

• **Information on other Intel-based Unix flavors, including BSDI and Linux.**

[www.nwfusion.com](http://www.nwfusion.com)



# HighGround raises NT storage management to new level

By Christine Burns

HighGround Systems last week rolled out a version of its storage management software that is better suited for tracking how disk space is consumed across an enterprisewide Windows NT Server network.

Storage Resource Manager Enterprise Edition 3.0 — HighGround's fourth update to its flagship product in 13 months — uses Microsoft's SQL Server 6.5 database as the central store for information about the consumption and availability of disk space across hundreds of NT Server machines. Because previous versions of the product relied on Microsoft's smaller-scale Access database, their scalability was limited.

Version 3.0 can maintain more historical data about how disk space has been used across the network, and can create

reports based on this data. The reports allow IS managers to predict future capacity needs, efficiently load balance file servers to avoid productivity losses and reclaim unused disk space.

HighGround is working on several other initiatives that will broaden Storage Resource Manager's reach in the enterprise, says Thomas Rose, vice president of marketing for the storage management

software maker. For example, he says HighGround is developing versions of Storage Resource Manager that will track disk space on NetWare and Unix servers. Rose says these products will be available next year.

In addition to the SQL Server 6.5 support, Storage Resource Manager Enterprise Edition 3.0 includes filters that allow administrators to audit all network storage for temporary files, graphics files and mailboxes.

The filters also allow the auditing of files used for IT-related projects, such as server consolidation, backup and recovery, and data migration.

Also in this release, HighGround has expanded the granularity with which an administrator can track how much disk space any person is using at any time. While previous releases let an ad-

ministrator track disk usage by network partition, this new release lets an administrator track usage on specific NT directories and shares.

This new feature will be crucial for office goods retailer Staples in its efforts to enforce disk space quotas for individual users.

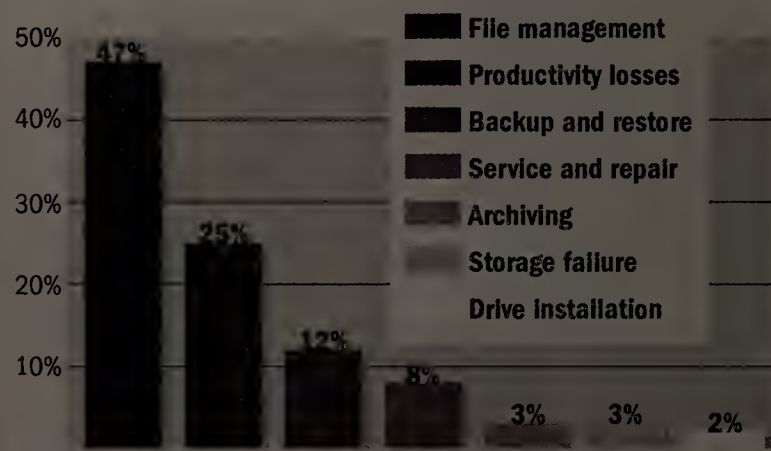
"I can now see the 50 largest files on my network. Talk about finding your heavy hitters easily. It's a beautiful thing," says Helen Flanagan, a senior Windows NT administrator at Staples, which has 120 NT 3.51 and 4.0 servers and 3,000 Windows 98 clients.

Storage Resource Manager Enterprise Edition 3.0 is available now. The console costs \$2,500 and agents for NT Server and NT Workstation machines cost \$400 and \$50, respectively.

© HighGround: (800) 395-9385

## STORAGE MANAGEMENT COST BREAKDOWN

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SOURCES: STRATEGIC RESOURCES, SANTA BARBARA, CALIF.

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## A dumb idea for smart cards

**W**ith all the hoopla and speculation about Microsoft's name change for Windows NT (to Windows 2000), you may have overlooked another operating system announcement the Redmondites made recently. But first, my

take on the name change. It fulfilled the first rule of PR: Get people talking about the product. It doesn't matter what people are saying about it as long as they are talking about it.

But the announcement I really want to talk about is Microsoft's commitment to write a Windows operating system for smart cards. Here's the background:

Initially we had "dumb" cards — charge cards that were used to imprint identification information on paper.

Next came the first generation of smart cards. These have a magnetic stripe that can store a small amount of identification data. They are used to enter that data into a reader, which can verify the information, manipulate it, rewrite it, etc. The latest generation includes microcircuitry and data storage, and these cards hold more information than the magnetic stripe cards while also having the benefit of random access. The magnetic stripe card is like a tape cassette, which must be read serially, while the new smart card is more like a solid state floppy disk.

So why does the smart card need an operating system? I've asked my pundit friends and searched trade magazines, but everything I've come across says a smart card only stores data.

Certainly the card does not do anything on its own. It must be inserted into a card reader, which is simply one more com-



**Dave Kearns**

puter peripheral device. It's the computer, by means of the card reader, that reads, writes and manipulates the data. So why is Microsoft doing this?

Two reasons. First and foremost is that Sun is releasing a Java operating system for smart cards. The second is that Microsoft's bid for ownership of the standards for reading and writing cards, called the Smart Card Software Development Kit (a set of APIs released last year), has elicited zero support. Microsoft feels the need to control all aspects of computer use. If the Smart Card API won't fly, maybe the Smart Card Windows operating system will. Stranger things have happened.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at [wired@uquill.com](mailto:wired@uquill.com).

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### Tip of the week

Fibre Channel-based storage-area networks (SAN) are really starting to take off. Novell and Microsoft's clustering solutions are headed in that direction, and a number of traditional storage companies are jumping into the market. Two to watch are Seagate and nStor (formerly Conner). Seagate has a version of Backup Exec for SANs, while nStor is rolling out an "adaptive" RAID solution — it automatically selects the best RAID level for your storage traffic. If you can't check them out at Comdex next week, go to [www.seagatesoftware.com](http://www.seagatesoftware.com) and [www.nstor.com](http://www.nstor.com).



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# Internetworks

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## Briefs

■ **What's happening with IPv6?** If you are in the New York area, you can find out tonight when the Greater New York Metropolitan Chapter of the Internet Society hosts a lecture by Christian Huitema, chief scientist at the Bellcore Internet Architecture research laboratory. The lecture will be held at 7 p.m. in New York University's Loeb Student Center, South Lobby, 566 LaGuardia Place (for directions, see <http://www.nyu.edu/pages/loeb/direct.html>).

Huitema will give an overview of IPv6 and its effect on everything from IP addressing to routing. The event is free and open to members of the Internet Society, the New York University community and the public.

For Internet Society information in New York, contact chapter President Wayne Spivak at [President@isocny.org](mailto:President@isocny.org).

■ **ARINC** recently rolled out a **Web-enabled version of Taboret**, the company's tool for building network management applications.

Network managers can use Taboret to create applications that will manage devices via SNMP. The applications will run on HP-UX, IBM AIX, Sun Solaris and Windows NT. The new version of Taboret, available for evaluation in December, will allow the applications to be accessed from a Web browser.

Taboret costs \$15,000.

© ARINC: (888) 822-6738

■ **Inside Out Networks** this week will introduce Rapidport/4, a stand-alone device that adds four 56K bit/sec modems to remote Windows NT access servers. The box plugs into a universal serial port on a Windows NT server, and is compatible with Windows 95 and 98 PCs. It can be used for dial-in remote access and dial-out modem pooling. Available now, Rapidport/4 costs \$1,199.

© Inside Out: (512) 301-7080

## BMC buys Boole

*Acquisition will boost management wares.*

By Jeff Caruso  
Houston

BMC Software's planned merger with Boole & Babbage is a great fit, industry analysts say.

Houston-based BMC last week announced it will acquire Boole & Babbage of San Jose, Calif., in a stock transaction worth about \$900 million. BMC has focused on application management and will combine its software with the smaller company's event management automation.

Though merging vendors often say their products are

complementary to one another, the term genuinely applies to this deal, analysts say. "This thing makes a heck of a lot of sense — from a business, product and channel perspective," says Herb VanHook, senior program director at research firm META Group of Stamford, Conn.

### Integration is key

The potential is there for the respective companies' software to be better integrated, says Minton Williams, manager of infrastructure development at Eastman Chemical of Kingsport, Tenn. Eastman Chemical uses management tools from both vendors. But Williams says he will wait to see what the merged company has to offer before evaluating new products.

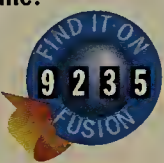
A lot hinges on how well the companies integrate the software at the data level, says

See BMC, page 28

### Get more online:

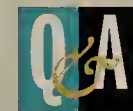
• An overview of Boole & Babbage's product line.

• A look at other service-level management offerings.



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## CEO: We're on the short list



Shortly after the merger was announced, BMC President and CEO Max Watson boarded a plane to San Jose, Calif., to explain the deal to Boole & Babbage's employees. From the air, Watson spoke with Network World Senior Editor Jeff Caruso about the Boole buy.



### What are some of the reasons behind the merger?

We just looked at the major initiatives we both had under way. Our product lines are very complementary, and combining our development organizations will give us a broad range of firepower. We provide the instrumentation and the agents, and they provide the console.

### How soon will you be able to integrate product lines?

Until we close on the merger, we're limited in what we can do. But we feel confident we can begin the integration work now, and within 30 days of the close, lay out our strategy.

### How easy will it be to integrate the product lines?

I think we can move quickly. A lot of our customers already have integrated Boole & Babbage's Command/Post and BMC's Patrol. Both are integrated with Tivoli, OpenView and Unicenter, and we will continue to be complementary to them.

### How does this change your position in the market?

We've become a vendor that will always be put on the short list.

## Crickets feast on fiber, put the bite on \$5.5 million project

By Mary Nell Westbrook  
and Traci Bowen

Everyone's heard of computer viruses, but it was bugs that put the brakes on a \$5.5 million network project at a school district in Texas. No, not software bugs, but the creepy, crawly kind — crickets, to be exact.

The Northwest Independent School District, north of Fort Worth, Texas, is in the midst of a project that involves upgrades to computer centers and the installation of data networks in six new buildings on three campuses. As part of the project, Southwestern Bell installed about \$2.5 million worth of fiber-optic cable in and between the new buildings. But after what seemed to be a routine installation and test, something went terribly wrong.

"We went back to make sure our tester was calibrated properly and nothing happened,"

says Ann Hallstrom, a project manager for Southwestern Bell in Dallas. "Everything was dark."

The fiber-optic cable terminates in boxes that look like large electrical outlets on interior walls. When troubleshooting the net, a Southwestern Bell crew opened one of the 156 boxes and found that crickets had invaded it, destroying some of the fiber.

So far, Hallstrom says her crew has found about 20 infested fiber boxes, all located in the new buildings. None of the existing structures, which were also newly wired for fiber, suffered any cricket damage.

### Who ya gonna call?

Carl Shawn, technology director for the school district, did what any good network manager would do in such a situation — he called a consultant. But this was no ordinary

consultant: Shawn called John Jackman, an entomologist from Texas A&M University. Jackman told Shawn that the crickets were likely trapped behind the sheetrock walls

The crickets were forced to eat whatever they could, be it the strands of fiber or each other, Jackman says.

Southwestern Bell also called in a consultant: Keith Haas, an

### CRICKETS NEED FIBER TOO

What to do if crickets invade your fiber installation:

- Wait for the crickets to die before doing repairs.
- Install foam mouse pads cut to fit on the inside of each fiber box, to block out any light.
- Place mothballs in the fiber boxes to repel unwanted visitors.



during construction of the new buildings. Crickets naturally follow light, so any light that was shining in from the room through holes in the fiber box would have lured the crickets. As the crickets followed the light, they dropped into the small box, unable to escape the way they came in.

entomologist with Granowsky Consultants in Bryan, Texas. Haas agreed that several factors contributed to the cricket infestation, including the recent drought in North Texas, which caused a surge in the cricket population, and the new con-

See Cricket, page 28



Berlin?

Beijing?

Bimini?

Barstow?





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## Cricket

Continued from page 25

struction, which disturbed the crickets' natural habitat.

Southwestern Bell opted to wait for the crickets to die, then make the repairs.

The carrier is now in the process of testing the 156 boxes, which hold a total of 1,000 fiber strands. The company will examine the fiber and replace or repair the strands as needed — at a cost of no more than \$64,740.

Southwestern Bell ultimately agreed to pick up the tab, although the company admits no wrongdoing, saying

the cricket infestation was a freak occurrence.

"I called all the manufacturers of similar cable, and the only problem anyone had ever heard of was termites destroying fiber in Australia," Southwestern Bell's Hallstrom says.

Through it all, Hallstrom is trying to keep her sense of humor. "People are

telling me, 'Crickets need fiber, too,' " she says, and friends are offering recipes for delicacies such as chocolate-covered crickets.

*Westbrook is a freelance writer in Jacksboro, Texas. Bowen is a photographer and reporter for the Wise County Messenger in Decatur, Texas, and a freelance writer.*

## BMC

Continued from page 25

Paul Mason, vice president of infrastructure software research at International Data Corp. of Framingham, Mass. Regardless, Boole & Babbage's Command/Post product provides a good console for consolidating mainframe and client/server data, he says.

However, META Group's VanHook cautions that Boole & Babbage customers may end up paying more for technology in the long run. The company has a reputation of offering deep discounts, whereas BMC has a reputation for playing hardball when it comes to pricing, he says.

### Mainframe heritage

"Command/Post and BMC's Patrol are two parts of the same equation," says Paul Newton, president and CEO of Boole & Babbage.

While Boole & Babbage has focused on managing networks and systems, BMC has managed applications and middleware. Boole & Babbage also has more of a mainframe heritage than BMC, which has developed products for Unix and Windows NT. "There's very little overlap," Newton says.

While the companies wouldn't give specifics, VanHook speculates that the combined company will continue to offer products marketed together, rather than build an all-encompassing framework.

Newton says he expects the acquisition to result in higher sales for all the companies' products.

Boole & Babbage didn't have a large enough sales force to pitch its products to all of its potential customers, but the deal will give the company a much longer reach overnight, he says. The combined company will have 4,400 employees in 26 countries.

### Wrapping up

The deal is expected to close in two to three months, subject to the approval of Boole & Babbage's stockholders. The two companies have had combined revenue of \$1.1 billion in the past 12 months.

The Boole & Babbage deal is the second major acquisition for BMC this year. In February, BMC announced plans to buy enterprise analysis tool maker BGS Systems for \$285 million. ■

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# Cisco remote office routers lower entry into IOS

By Jim Duffy  
San Jose, Calif.

Cisco has lowered the entry point of its IOS devices with a new router line for the small office/home office

(SOHO) market.

Introduced last week, the Cisco 800 series routers are the lowest priced products on the market that run Cisco's IOS routing software, Cisco officials say.

As such, the 800 series is designed to extend the features of IOS to a much broader market base.

Previously, the company offered the Cisco 700 series as its SOHO router. But

the 700 did not run IOS software. Cisco's entry point into IOS was the Cisco 1600 series, which costs \$1,495. The 800 series pricing will start at \$799.

The 700, which costs \$499, is now being positioned as a low-cost ISDN router for price-sensitive home users and telecommuters who do not need -- or can't afford -- the IOS feature set, says Troy Trenchard, Cisco senior product line manager. The 1600 is now positioned as Cisco's entry-level modular offering.

The 800 is a fixed-configuration router and comes in four flavors: the 801 and 802 feature one Ethernet port and an ISDN S/T and U Basic Rate

**IN 2.7 GIGABYTES, THE FINANCIAL MARKETS WILL CLOSE. YOUR NETWORK HOWEVER, IS STILL OPEN FOR BUSINESS.**



Cisco's 800 series router extends the features of IOS to more users.

Interface, respectively. ISDN S/T supports four copper lines and U supports two copper lines. The 803 has an ISDN S/T with a four-port hub and two point-of-termination bays, and the 804 has an ISDN U with a four-port hub and two POTs.

Cisco IOS features in the 800 include security, such as encryption, authentication and access control lists; network management and monitoring via CiscoWorks2000 and CiscoView; and Cisco IOS investment protection through the use of the IOS command line interface.

For virtual private networks, Cisco next year will add firewall support and the IP Security tunneling protocol to the 800 series, Trenchard says.

The IOS features of the 800 series are hitting home with users.

"The main problem was that the 700 series did not run the full Cisco IOS," says Reid Fishler, president of Lightning Internet Services in Mineola, N.Y. "The 800 gives you the availability to do the things you expect a Cisco router to do."

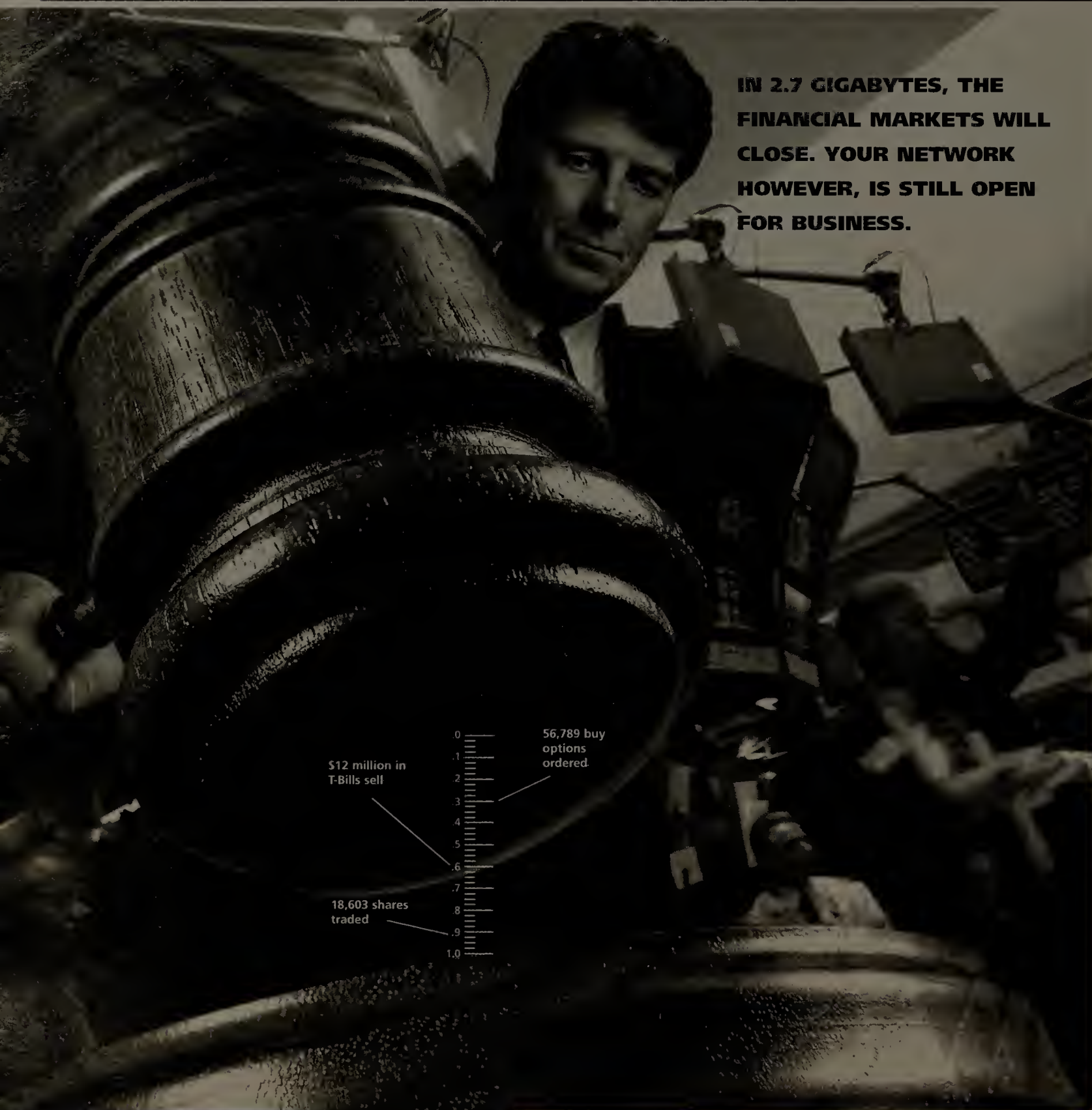
One of the things the 800 does not allow you to do is 56K bit/sec dial access, Fishler says.

"Technically, it would be nice to have," he says. "I know 3Com/USR has a product out that allows for 56K bit/sec modem access over ISDN BRI on a one-port basis."

Fishler also says he'd like Cisco to extend analog ports to the 1600 and 3600 series remote access routers.

The 801 and 802 cost \$799 each. The 803 and 804 are priced at \$899 each. All the routers are available now.

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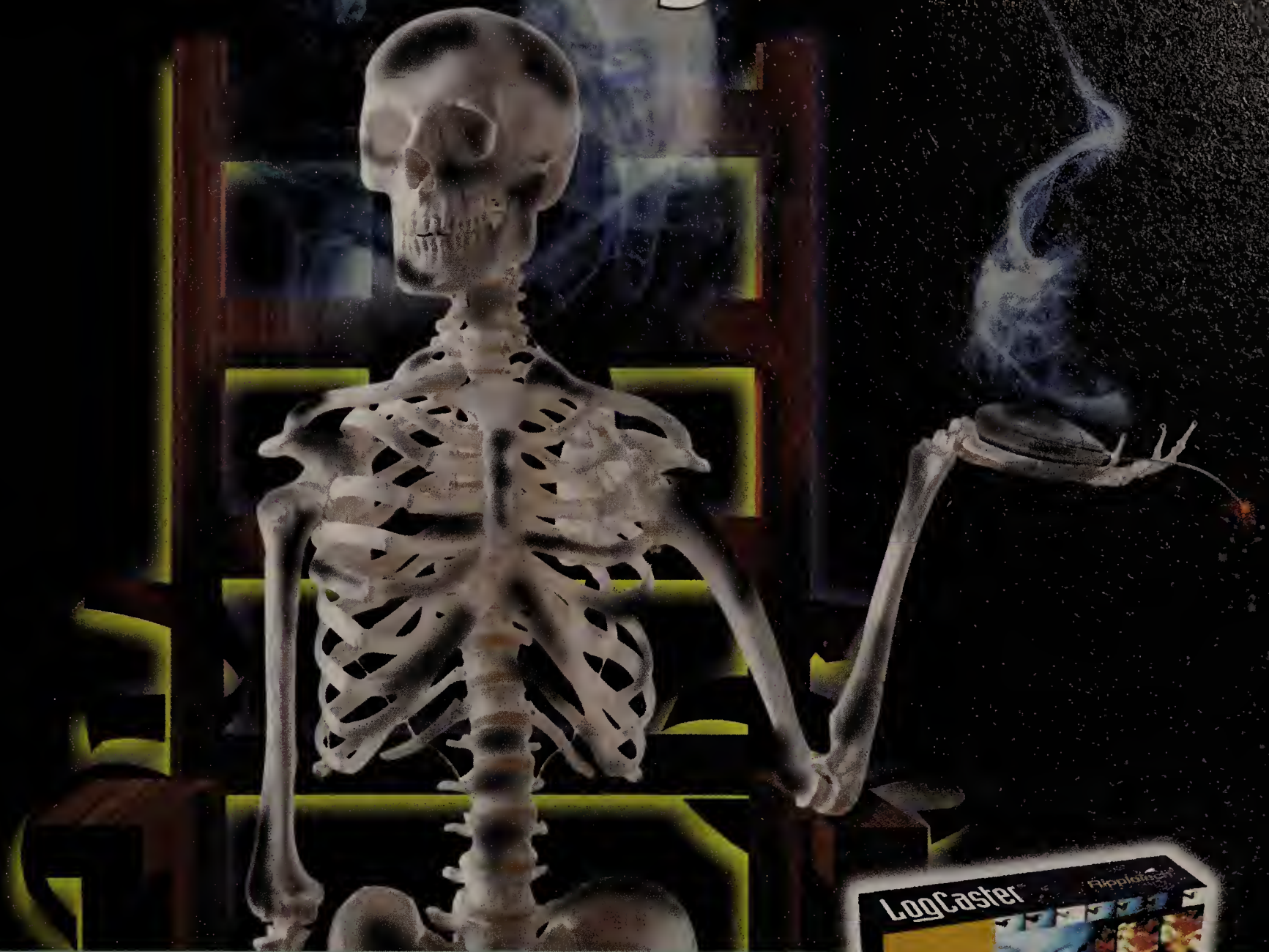
stock exchange, the volume of information transactions fluctuates wildly as gigabytes of data circulate worldwide within fractions of a second. ↑ As the demand for information peaks, one issue stands alone – can the network handle the volume? ↑ Financial sector businesses require an information infrastructure that is ready for anything. It is probably the most important investment they'll ever make. It's also why they choose Newbridge to deliver their network.



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# Carriers & ISPs

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## Briefs

■ **WinStar Communications**, a new carrier offering fixed wireless local access as an alternative to Bell company local loops, has introduced an eye-catching offer — **free business local calling until 2000**. To get this benefit, users must sign a three-year contract with a long-distance toll rate of 9 cents per minute, which is more than many users pay under negotiated contracts. WinStar says it does have long-distance volume discounts reduced to 6 cents per minute, though in all cases free local calls are capped at \$1,000 per month. The offer is initially available in 1,000 office buildings in 13 cities.

© WinStar: (888) 946-7827

■ **GTE Internetworking** has rolled out its **Site Scan security** service. GTE Internetworking will scan up to 15 perimeter devices, such as firewalls and Web servers, that are accessible through customers' WAN connections. The ISP scans the devices from its network operations center in Burlington, Mass., for weaknesses in the network and reports findings to the customer. The service is available now for \$5,000 per year for quarterly scans or \$9,600 per year for monthly scans.

© GTE Internetworking: (617) 262-5600

■ **Nortel Networks** will this week announce a way for carriers to offer **customers Centrex services over IP and wireless networks**. The new capabilities will require interfaces between the intelligence that supports Centrex service in the traditional circuit switched voice networks and IP and wireless networks. Previously, no such interface existed. Centrex software is integrated in Class 5 voice switches such as Nortel's DMS switches.

© Nortel Networks: (800) 466-7835

## AT&T hikes prices of popular frame relay speeds

Prices of 56K, T-1 port and all PVCs go up, though costs of intermediate-speed ports go down.

By David Rohde  
Bedminster, N.J.

Attention all you users with plain-vanilla, 56K bit/sec frame relay sites: Carriers may start treating you better if you upgrade those branches to a higher port speed.

AT&T late last month quietly slipped through a frame relay price change that raises the cost of the two most popular frame relay port speeds — 56/64K bit/sec and T-1.

At the same time, AT&T lowered the price of all the in-between port speeds, cutting a break for branch offices that support more than simple LAN interconnection traffic to the network.

In explaining the action, AT&T officials emphasized the benefits of the intermediate price drop, which becomes increasingly generous at higher speeds below the T-1 threshold (see graphic).

Many users who are implementing enterprise resource planning software packages require frame relay connections of 128K bit/sec or above

at multiple locations, says Keith Falter, marketing manager for AT&T frame relay services.

As far as the higher 56/64K bit/sec price goes, "there's not a specific rationale for that," Falter claims. And even though AT&T raised the low-speed port price and lowered the higher speed port prices, "this is not intended to force existing customers to move in any direction at all," he says.

Some analysts found that explanation difficult to believe. AT&T's action is part and parcel of a campaign to get as many of its customers' small sites as possible onto dedicated T-1 access lines, says Tom Jenkins, a senior consultant at TeleChoice, a telecom consulting firm in Tulsa, Okla.

Users with a basic frame relay port can use a dedicated 64K bit/sec access line, he explains. But he says moving to a 128K bit/sec port usually requires users to jump to T-1 access to the long-distance carrier's point of presence

because of local carriers' provisioning practices. And that T-1 would offer 24 digital channels of 64K bit/sec for

"But if AT&T can get their own T-1 in there, now they have another 22 channels on that local access line that they

### PORT PARADE

AT&T hiked prices for its popular 56/64K bit/sec and T-1 frame relay ports, but offered reductions to entice users to intermediate speeds.

Port speed	Old monthly price	New monthly price	Percentage change
56/64K bit/sec	\$285	\$295	+3.5%
128K bit/sec	\$570	\$520	-8.8%
256K bit/sec	\$850	\$770	-9.4%
512K bit/sec	\$1,405	\$1,215	-13.5%
T-1	\$2,535	\$2,690	+6.1%

Prices for all PVCs increased 4% to 12%. All listed prices are before term, volume and negotiated discounts.

SOURCE: AT&T, BRIDGEWATER, N.J.

use by AT&T services, only two of which would be chewed up by a 128K bit/sec frame relay interface.

"AT&T is concerned about all these new providers out there talking about integrated access and trying to offer bundled services," Jenkins says.

can sell services on, including Internet services."

Users agreed. "What AT&T is trying to do is create incentives to move users to higher bandwidth architectures because that's most efficient for their network," says Kelsey Hill, executive

See AT&T, page 34

## Consortium building wireless momentum

By Denise Pappalardo

Mobile computing is expected to get easier in the next couple of years thanks to more than 200 vendors backing Bluetooth, a new wireless technology.

Bluetooth is designed to let

users connect multiple types of devices, such as laptop computers, mobile phones and printers, without the use of cables. Its backers call Bluetooth a draft specification, though it has not been submitted to any formal stan-

dards body.

The technology will let users receive e-mail on wireless handsets or send a document to a printer over the unlicensed wireless Industrial, Science and Medical frequency band. Bluetooth is limited to transmissions within 30 meters.

Late last month, the Bluetooth Special Interest Group (SIG), founded in May by Ericsson, IBM, Intel, Nokia and Toshiba, held its first developers conference in Atlanta.

Vendors demonstrated PC-to-PC file transfers at 500K bit/sec using the draft specification, says Simon Ellis, marketing manager for Intel's mobile and handheld products group.

At the conference, the Bluetooth SIG announced

that 3Com, Hewlett-Packard, Lucent, Motorola, Philips, Samsung, Texas Instruments, Xircom and other companies are now part of the SIG and are interested in developing products based on the Bluetooth technology.

The Bluetooth 1.0 specification is expected to be complete by mid-1999, with products following by early 2000, Ellis says.

Bluetooth technology is expected to give users more flexibility when they are on the road via low-cost devices. For example, Bluetooth technology is only expected to add \$20 to the total cost of any device, says Skip Bryan, director of technical marketing at Ericsson. Today the technology is based on a dual chipset, but plans are in the works to integrate Bluetooth onto a single chip, which will reduce add-on costs to \$5.

See Bluetooth, page 34

### Bluetooth gains momentum

There are now more than 200 companies that are part of the Bluetooth Special Interest Group, which is developing a wireless specification. The founding members, and the technology they are providing, include:

Company	Technology
Ericsson	Radio technology/chipset
IBM	PC integration software
Intel	Chipset/software
Nokia	Radio technology/handset software
Toshiba	PC integration software



Devices such as Nokia's 8810 cellular phone will be Bluetooth-enabled.



## WAN MONITOR

## When you check in, check out the communication costs

One of the first lessons business customers learn is "Read the fine print." What some folks don't learn is that they should continue to read the fine print even after the contract is signed — call it continuing education.

And because we brought it up, today's continuing education message is: Compare your calling card charges with cell phone charges. Believe it or not, it's cheaper for our employees to use their AT&T Digital One Rate cell phones from their hotel rooms. No surcharge, 10 cents per minute. The same might be true for your employees.

There are a few other educational tricks your employees should learn. Most people use laptops while traveling to check e-mail and do work.

The alternative of not checking e-mail while traveling for a day or two is to return to a stack of 999 waiting messages. This makes lugging around an extra six pounds the lesser burden (not to mention that this is the only exercise you engage in on a regular basis).



**Daniel Briere**  
**Christine Heckart**

It used to be a pain using calling cards for dialing remote access numbers. Now services such as IBM's Global Network Service, and many others, allow the weary business traveler to dial a local number from almost anywhere in the world and connect to the Internet. But beware of the latest hotel scam. However, the single-rate local call system may be disappearing in favor of a usage-based option. More and more, in the fine print you may discover that if you camp on the line more than 30 minutes, you'll start raking up hefty charges for that local call. The Hilton on 6th Avenue in New York does this, so does the Charles Hotel in Cambridge, Mass. And they obviously count on people not reading the fine print because anyone would simply disconnect after 29 minutes and log on again.

In our case, Christine camped on to download e-mail and went to dinner. The charge was 10 cents per minute, or an \$18 call. Fortunately, the man behind the manager's desk at the Hilton was nice

enough to delete the charges after listening to a complaint that there was no verbal warning of this policy upon check in. In this case, the small print explaining the policy was hidden, and the bill did not show the duration of any call.

As more people camp on, these rates could increase because the hotel PBXs were never really designed for this sort of traffic. As native Ethernet options become available in hotels, they may boost the charges substantially to encourage migration to their \$9.99-per-night Ethernet connection charge.

So while, on the one hand, increased competition and the Internet are saving us money by reducing rates and allowing local calls for long-distance connections, you may be giving your savings away in other areas such as cell phone charges and hotel calls. Those costs are often expensed through accounting, you might not be seeing them at all. While that might be good for your IT budget, it will not be good for the company's bottom line, and that's something definitely worth checking out.

*Briere is president and Heckart is vice president of TeleChoice, a consultancy in Boston. They can be reached at [dbriere@telechoice.com](mailto:dbriere@telechoice.com) and [heckart@telechoice.com](mailto:heckart@telechoice.com).*

## AT&amp;T

*Continued from page 33*

utive vice president for telecommunications and network services for the IT subsidiary of MBNA Bank in Wilmington, Del. "AT&T is saying that if you're utilizing network resources in the most inefficient way, you're going to have to pay a premium for it." The overall price increase to MBNA will be "moderate," Hill says, because the bank has some 1024K bit/sec ports in addition to T-1 frame relay and T-3 ATM, plus generous volume discounts.

Also adding to the bite: Not only did AT&T raise rates on the two most popular frame

relay port options, it also hiked prices across the board on permanent virtual circuits (PVC).

For example, a PVC with a 32K bit/sec committed information rate (CIR) — the amount of bandwidth reserved that cannot be dropped in case of network congestion — increased from \$61 to \$65 per month. A reservation for a PVC with 384K bit/sec of CIR increased from \$709 to \$744 per month.

Analysts say they assume that means AT&T will enjoy a net revenue gain from the pricing action. Falter would not confirm or deny that, but he says the pricing action as a whole "supports the network improvements that we're doing, such as the deploy-

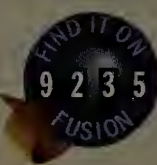
ment of our suite of Web tools." AT&T recently put its Order Manager and Ticket Manager applications on the World Wide Web for customers to place orders and trouble tickets.

AT&T officials also cited financial requirements of its infrastructure upgrades, such as the movement of its national network to SONET rings. ■

## Get more online:

- Details on frame offerings from other carriers.
- Tips on frame relay service-level agreements.

[www.nwfusion.com](http://www.nwfusion.com)



## Bluetooth

*Continued from page 33*

Bryan says.

Because the technology is using an unlicensed wireless band, users will not have to worry about monthly service bills.

One of the goals of Bluetooth is to bring together a collection of devices that can communicate with each other regardless of vendor or product type. That mission explains how the technology got its name, Bryan says. Harold

Bluetooth was a 10th century Danish king who united Denmark, Southern Norway and Southern Sweden, and brought Christianity to those territories, he explains. In the technology's case, the vendors represent the countries, and the specification represents Christianity.

Using Bluetooth, not only should users expect new capabilities in their current mobile devices, but new products are also in the works.

Imagine traveling to one of your company's branch sites and connecting to the Internet

without searching for an RJ-11 telephone jack that's not connected to a PBX.

Companies are developing access nodes that will let users who have a Bluetooth port on their laptops connect to a device similar to the base station for a 900-MHz telephone, says Joe Doria, worldwide product manager for Think Pad systems at IBM. The access node would be found on a LAN in sites near spare office space or in a conference room, Doria explains.

More information on the Bluetooth SIG is available at [www.bluetooth.com](http://www.bluetooth.com). ■

## IBM Global Services boosts EDI, electronic commerce services

**By Rebecca Sykes**  
*Boston*

IBM Global Services is targeting small to mid-size business users with new electronic data interchange and electronic commerce services.

Announced last week, the EDI consulting services include EDI Health Check, where IBM Global Services consultants will examine how a customer is using EDI and suggest improvements. A second consulting service, called Planning for EDI on the Internet, is designed to help customers determine how to use the World Wide Web to build their businesses, says Neil Isford, vice president of e-business services at IBM Global Services.

Global Services also announced 15 new "enablement services," including:

- Intranet/Extranet Partnership, a service to help customers determine how to define, build and deploy business relationships on the Web, especially with strategic alliance partners. Pricing starts between \$60,000 to \$100,000.

- City Info Center, which consists of Lotus Domino templates that help Web-enable a community, such as a town or

an interest group. Pricing typically ranges between \$100,000 and \$400,000.

- Knowledge Lab, which is IBM's internal intellectual capital management system, which permits the sharing of intellectual assets across a defined community.

- Web Decision Support, a personalized Web site, which following an interview with the user, utilizes a graphical user interface to give the individual data from internal legacy applications as well as different Web sites.

IBM also announced today enhancements to existing consultant workshops designed to help customers understand electronic commerce and how they can use it to help grow their businesses. The workshops are tailored for specific industries, including insurance, retail, manufacturing, banking and finance, health and utilities, according to Isford. Pricing for the workshops is usually between \$10,000 and \$20,000, he says.

For more information, contact IBM at (914) 766-1900.

*Sykes is a correspondent with the IDG News Service in Boston.*



WHAT EXACTLY  
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**e-business means a lot of things.** It means moving business to the Web. It means improving relationships with customers, suppliers and employees — boosting communication and efficiency both inside and outside an organization. It means looking at data in new and meaningful ways.

e-business also means looking at PC networks in new and significant ways. And it's probably not much of a surprise to hear that Windows NT® has become one of the most popular new operating systems in the corporate world.

**In 1997, use of The Windows NT Server operating system grew by 139% world-wide, reaching a 34% share of all server operating systems (source: IDC).**

What you may not know is that IBM is building Intel®-based servers with the power to run the major business applications — from companies like SAP, Baan, JD Edwards, Oracle and QAD — used in the largest of corporate networks.

**But it isn't power and reliability alone** that distinguish Netfinity servers from their would-be peers. It's that they come loaded with things like IBM Netfinity Management tools — a comprehensive set of standards-based software tools that make it easier to manage and run your network. And that when you add advanced e-business tools like Web Server Accelerator (it's free on the Net), you can optimize

performance by up to 60% when a Netfinity 7000 M10 server is used to serve up the Web.\* It's that we work with industry leaders like Intel to bring new, more powerful technology to market — in servers designed to use it to its fullest.

The Netfinity 7000 M10 server, for example, is powered by the new Intel Pentium®II Xeon™ processor 400 MHz, providing it with some of the highest performance benchmarks in its class. (Visit [www.pc.ibm.com/us/techlink/srvperf](http://www.pc.ibm.com/us/techlink/srvperf) for details.)

**History, plain and simple**, also separates Netfinity servers from all others. IBM has been building mission-critical systems for the corporate world for decades, and now we've applied that expertise to the world of Windows NT. Netfinity servers are the first to offer scalable parallel technology with a clustered system and hot-plug PCI implementation. Netfinity servers also offer scalability features you don't expect in a server running Windows NT — like the ability to hot-swap hard disk drives, adapters, power supplies, and more — without taking your network down. Netfinity servers are also quick and easy to integrate into your existing IT infrastructure, whether it's powered by IBM (thank you) or not.

**Netfinity servers from IBM aren't just tools for big business, they're tools for big e-business.**

FACT

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The real explosion of Windows NT servers has been at the departmental level — starting with desktop computers and then connecting those desktops into larger networks, enterprise servers and legacy systems.

The growth of intranets, Web commerce and sophisticated custom apps built with powerful cross-platform software like Lotus® Domino™ has fueled the demand for powerful, reliable servers that connect thousands of PC users inside an organization — from sales reps in the field armed with ThinkPads, to desktop users in customer service departments. Servers like the Netfinity 5500 Series.

FACT

**A server is a repository of information, information that quickly becomes powerful business intelligence when fully exploited. This is e-business. Knowing more about customers, what they need and want. Mining growth out of details. Uncovering new markets (and margins) from within.**

All these people connected via Windows NT servers also need access to the detailed information that resides on the more powerful systems that are the core components of a major enterprise (like, say, an IBM RS/6000 SP UNIX®

server capable of processing millions of transactions a second). In such a world, the ability to quickly and seamlessly integrate departmental Windows NT servers into your larger IT infrastructure is critical.


Netfinity servers, like the new Netfinity 5500 M10, help simplify this integration. Take, for example, IBM Netfinity Manager software. It ships with every IBM Netfinity server. It's platform agnostic. It lets you manage clients and servers from dozens of leading manufacturers. It also helps you tie your Windows NT network into enterprisewide management software such as Tivoli® Enterprise™, Microsoft® SMS™ and Intel LANDesk™.

This is what e-business is all about — not just building powerful servers for departmental use (and make no mistake, the Netfinity 5500 M10 can handle everything from huge e-mail networks to 24/7 Web commerce), but also providing tools to integrate and manage those servers as part of a much larger network. This helps you control costs and keep your network up and running.

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 e-business tools





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That's a very affordable server — but not a stripped one. Like all Netfinity servers, the Netfinity 3000 comes standard with Lotus® Domino™ or Lotus Domino Intranet Starter Pack,™ not to mention Netfinity Manager software.

**This makes it easy and inexpensive** to put your business on the Web, allowing millions of customers around the world to reach you. So you can grow from a very small business (say, for example, one pet store) to a very large one (say, the world leader in designer dog chow sales). As your business grows, you'll appreciate the

virtues of the systems management software that makes it vastly easier to keep your network up, running and generating more business. Nothing wrong with that.

**Every Netfinity server includes a 3-year limited warranty and 24-hour Start Up Support. Leasing plans, automatic 2-year product refresh, and customizable support, system installation and integration are available if you desire through our SystemXtra program.**

FACT

Of course, the value, quality and reliability of the Netfinity 3000 server is such that a whole bunch of not-so-small businesses will choose them by the dozens for things like print spooling and file management. Not the most glamorous tasks, but the day-in, day-out, got-to-be-dependable side of e-business.

If you'd like to know more about the full range of IBM Netfinity servers, financing arrangements and server options — from supplemental storage to fiberoptic connections — bookmark [www.ibm.com/netfinity](http://www.ibm.com/netfinity).

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\*Netfinity 7000 M10 performance, configured with four Intel processors and running Microsoft Windows NT, compared to next best competitor results on SPECintbase96 benchmark as of July 17, 1998. Server configuration and test environment may vary. Estimated reseller price to end users for model 6600HU (Netfinity 7000 M10), 6651HY (Netfinity 5500 M10), 8476SU (Netfinity 3000). All include IBM 4.5GB hard disk drive. Certain features described are available for an additional charge. Network operating system not included. Actual reseller prices may vary. MHz denotes microprocessor internal clock speed only; other factors may also affect application performance. For terms and conditions or copies of IBM's standard Limited Warranty, call 1 800 772-2227. In the U.S., Limited Warranty. Service in those countries where this product is sold by IBM or IBM Business Partners (registration required). IBM product names are trademarks of International Business Machines Corporation. Microsoft, Windows and Windows NT are trademarks of Microsoft Corporation. Lotus, Domino and Domino Intranet Starter Pack are trademarks of Lotus Development Corporation. Intel, the Intel Inside logo and Pentium II Xeon is a trademark of Intel Corporation. Other company, product and service names may be trademarks or registered trademarks of others. © 1998 IBM Corp. All rights reserved.



# Intranet Applications

Covering: Messaging • Groupware • Databases • Multimedia • Electronic Commerce • Security

## Briefs

■ **RSA Data Security** last week began shipping two tool kits for adding **Java-based security** to applications. BSafe SSL-J lets developers add Java-based Secure Sockets Layer authentication mechanisms, while BSafe Crypto-APIs are used for building Sun's Java APIs into Java applications. Each tool kit costs \$295, with run-time licenses for products using the tool kits determined on a royalty, per-seat or annual fee basis.

© RSA: (650) 295-7600

■ **Intel** last week introduced the InBusiness eMail Station, a paperback novel-sized appliance that **supports electronic messaging** applications for sites with 50 or fewer end users. The device works with any Post Office Protocol 3 mail client and automates the sending and



Intel's dedicated e-mail appliance.

retrieval of messages. This feature eliminates the need for end users to have their own ISP accounts. The company says the product, which can link to a 10M or 100M bit/sec hub or switch, can be installed in about 20 minutes. The InBusiness eMail Station costs about \$699.

© Intel: (800) 538-3373

■ **Aditi** of Bellevue, Wash., this week will join the growing ranks of vendors offering software that helps companies manage and respond to high volumes of **e-mail generated by Web site addresses**. Aditi's product, called Talisma, is Windows NT client/server software that queues, tracks and helps employees fashion responses to customer e-mail and Web forms. Talisma costs \$2,995 per seat. A co-marketing version that carries a Talisma signature is available for \$995 per seat.

© Aditi: (425) 897-2900

## BEA creating middleware buzz

Company looks to keep growing via acquisitions and internal development.

By John Cox

Sunnyvale, Calif.

With its recent \$192 million acquisition of application server vendor WebLogic, BEA Systems took a big step toward marrying transaction processing systems to the World Wide Web.

This is the latest move by a company that intends to become the "Home Depot of middleware," says co-founder Ed Scott, referring to the one-stop-shopping philosophy of the nationwide home-improvement retailer.

"We've been a public company for six quarters, and we've been exceeding Wall Street analysts' expectations every quarter," says Scott, whose firm turned a profit in fiscal 1998 and more than doubled its revenue from the previous fiscal year.

Middleware, such as BEA's flagship Tuxedo offering, is the unsung and invisible software plumbing that lets applications on a network share information.

For many companies, middleware has been so strategically important that they've invested millions of dollars to build and maintain a middleware framework that knits their key systems together.

"BEA has clearly tapped the value of middleware," says Ted Schadler, an analyst with Forrester Research, a Cambridge, Mass., consulting firm. "It has a \$1.7 billion market capitalization, all based on middleware. It's kind of shocking, really."

The WebLogic buy is just the latest in a series of BEA acquisitions, which has included the purchase of Tuxedo development and distribution rights from Novell and the buyout of NCR's Top End product line.

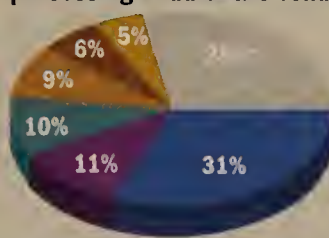
The grow-through-acquisition strategy has enabled BEA to rise to the top of the market for distributed transaction processing middleware.

The company held a 31% share of the market last year, according to International Data

### AT THE HEAD OF THE MIDDLEWARE PACK

With the introduction of its new M3 transaction broker, BEA looks to continue its middleware market leadership.

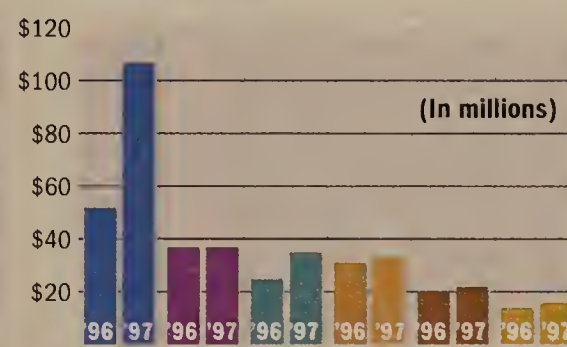
1997 worldwide revenue market share among distributed transaction processing middleware vendors



\*Companies with less than 5% revenue market share

Total market: \$347.3 million

### Revenue leaders in distributed transaction processing middleware



SOURCE: IDC, FRAMINGHAM, MASS.

Corp., a Framingham, Mass., market research firm (see graphic).

Analysts say BEA's challenges

include integrating each newly acquired product line with the company's existing offerings, as well as putting forth a consis-

tent marketing message to potential customers.

In addition, the company  
See BEA, page 40

## Law threatens e-commerce for U.S. firms

By Ellen Messmer

A new European Union privacy law could have a big impact on U.S. businesses that operate in EU countries or process data on European citizens over the World Wide Web.

The EU Privacy Directive prohibits the collection, resale or reuse of data on individuals without their explicit consent.

The EU law requires government-run data privacy agencies in Europe to investigate complaints and, if warranted, order the destruction of personal data warehoused by corporations.

Some observers feel the U.S. and Europe are now on the brink of a trade war over the directive.

Unless the U.S. adopts similarly tough measures to protect the privacy of personal data, the Europeans could cut off the flow of processed data. U.S. Commerce Undersecretary David Aaron has won a mid-December postponement of punitive measures being enforced against U.S. companies.

By that time, both sides hope to reach what Aaron calls "a workable framework" of principles that would be a "safe harbor" for businesses.

In the U.S., the Federal Trade Commission (FTC) has worked hard to get firms to take voluntary steps to tell consumers how their personal data is being used. Under this system, individuals can opt out of having data about them used for marketing purposes.

But an FTC survey taken earlier this year shows that 92% of Web sites are collecting and recycling personal information, while only 14% have stated privacy policies. To protect European citizens, the EU now wants the U.S. to formalize the enforcement of privacy rules, Aaron says.

U.S. officials are worried that firms will exploit the EU directive, lodging legal complaints intended solely to dis-

rupt competitors' operations.

A London-based public-advocacy group called Privacy International claims to be building a case against two dozen U.S. and European firms, including AT&T, Bayer AG, British Telecommunications, Ford Motor, Proctor & Gamble and Royal Dutch Shell. In addition, the group is said to be building a case against the FBI.

Some privacy law experts maintain that it will not be sufficient under the European guidelines to advertise a data privacy policy that asks for blanket permission to do whatever is desired with personal information.

A Web data privacy policy is a good start, says Marc Rotenberg, director of the Electronic Privacy Information Center, a public-advocacy group in Washington, D.C. "But under the directive, it's quite clear that blanket consent isn't going to be enough," he says. ■



U.S. Commerce Undersecretary Aaron is negotiating with the European Union.



# Netscape opens up PeopleSoft apps

By Robin Schreier Hohman  
Mountain View, Calif.

First Netscape brought Web information to the outside world with its groundbreaking Navigator browser. Now the company is rolling out two new applications intended to do nearly the same thing for data contained in PeopleSoft enterprise resource planning (ERP) programs.

The new software is designed to take the mounds of information within PeopleSoft's databases and applications and make it available for use by other programs.

One application is Netscape PerLDAP for PeopleSoft, a Perl-based version of Lightweight Directory Access Protocol. PerLDAP lets companies access corporate user data stored in PeopleSoft systems in order to manage user accounts throughout the enterprise.

The other new offering is Netscape Application Server for PeopleSoft, which works with Netscape Directory Server to expose modules, such as procurement, sales and ordering, to outside customers. Using Netscape Application Server for PeopleSoft, customers using Web browsers can authenticate themselves against the directory server and pay bills directly through a company's PeopleSoft system.

Companies willing to let customers access internal data can create user profiles for those customers. The profiles can then be used for targeted Web advertising. For example, a bank might want to display a financial services advertisement to a customer who has an online bank account but not an online trading account.

"Netscape really had to [come out with such tools]

because the convergence of ERP and the Internet is starting to explode," says Eric Bragg, vice president of sales and marketing at Advis, a consulting firm that integrates ERP programs with other technology. Products such as Netscape's new offerings can help drive down the cost of adding end users to ERP systems, which can cost anywhere from \$500 to \$2,000, he says.

Netscape PerLDAP for PeopleSoft can be downloaded free at [www.mozilla.com](http://www.mozilla.com), one of Netscape's Web sites. Netscape Application Server for PeopleSoft will ship in the first half of 1999, and will run on Windows NT and Solaris platforms. It will cost \$70,000 per CPU.

In September, Netscape announced similar products supporting SAP R/3 software.

© Netscape: (650) 937-2555

## BEA

*Continued from page 39*

will have to stay ahead of formidable rivals, such as IBM and Microsoft. IBM offers a well-rounded collection of software, including mainframe and Unix versions of CICS and the Unix-based Encina transaction processing system from IBM's Transarc subsidiary.

Microsoft, meanwhile, is integrating its Microsoft Transaction Server and Component Object Model technologies with Windows NT to make it easier for developers to build applications that can tap into Microsoft's transaction processing technologies.

BEA's primary weapon in fighting off such rivals is a new product dubbed M3, an object-based transaction broker introduced in June that will serve as Tuxedo's successor.

"About 40 or 50 customers

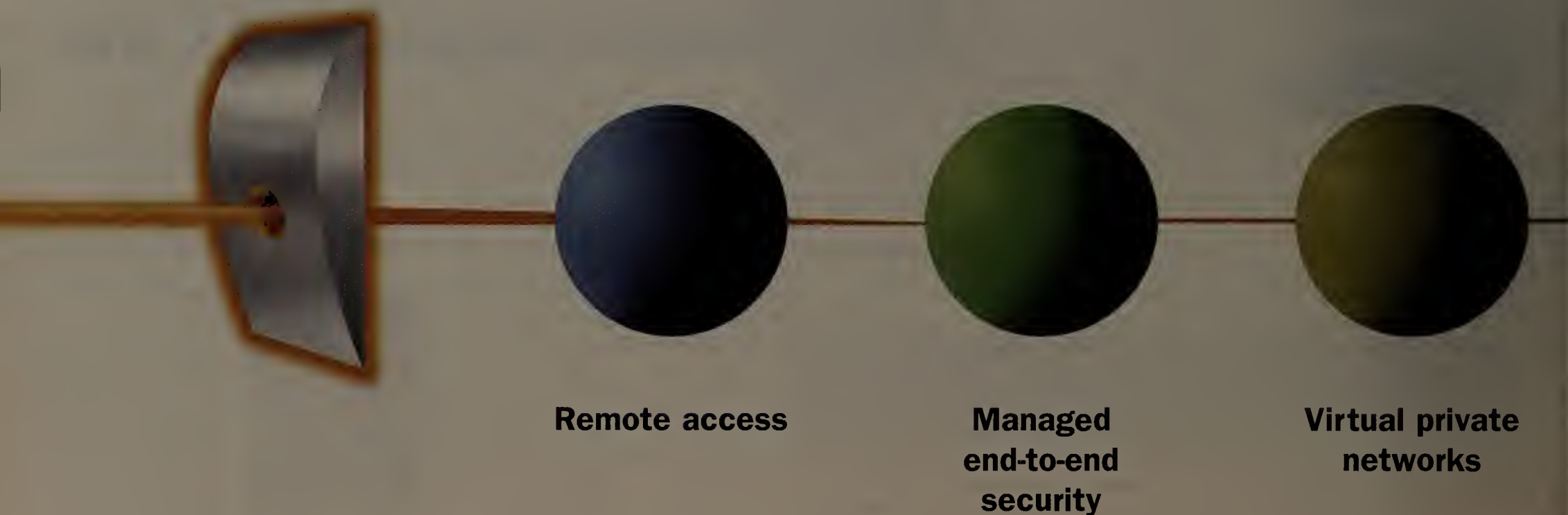
are working with M3 now," Scott says.

"It will be a slow but steady transition from Tuxedo to M3, which gives users all the robustness and reliability of Tuxedo, plus the distributed object capability," he says.

The Tengah product line, obtained via BEA's WebLogic acquisition, adds support for reusable Java software components to BEA's product portfolio. Tengah also adds technology for providing Web access to server-based data, transactions and applications.

"With the combination of M3 and Tengah, BEA is in a good position to lead in the application server market," says Michael Gilpin, vice president for middleware services at Giga Information Group, a technology research firm in Norwell, Mass.

"BEA needs the Tuxedo revenue to fund development for this expensive market of enterprise application servers," he says. ■



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# 'NET INSIDER

## Is there hope for digital subscriber line technology?

**A**s a columnist for a technical publication, I am presented with a surfeit of opportunities to speak to marketing droids from companies that claim to have answers to questions I didn't even know I had. (A disclosure: I do try to arrange some of the visits for lunch time so I can at least get a few free meals out of the encounters.)

From time to time, these meetings actually result in useful information. One such meeting took place two weeks ago when Rick Gilbert, CEO of digital subscriber line (DSL) equipment vendor Copper Mountain, came by. (Unfortunately, the only time that worked was early morning, so no free lunch.)

I've been hearing horror stories for the past few years about the problems encountered

when ISPs and other companies attempt to deploy various types of DSL connections to their customers. Particular problems have included difficulty in getting wires from the phone company that are clean enough to provide good performance and potentially severe cross talk that results from having more than one DSL link in the same cable bundle running down the street. I've also heard tell of significant distance limitations.

Of course, the most severe challenge to DSL's future is that in general it is a technology empowered by the aggressive, innovative environment common among telephone companies. Not!

DSL is seen by these companies as a technology for providing mixed voice and data ser-

vices over the same line. As a result, the version of DSL they are working on uses ATM to multiplex the services and is tightly tied to the voice world. In addition, the same people in the telephone companies



Scott Bradner

who brought you ISDN are involved in bringing you DSL.

Now there's a potentially fatal burden if there ever was one.

There seem to be dozens of DSL flavors, and not all of them have the same set of

issues. ISDN DSL (IDSL) and Symmetric DSL (SDSL), the types of DSL that Copper Mountain and others are promoting, use the same on-the-wire technology (2B1Q) that ISDN uses.

This means, among other things, that the cross talk problems that plague some types of DSL are not a significant issue. The ability to run at a reasonable speed — 128K bit/sec over 22,000 feet of wire and faster over shorter cable runs — means far better coverage than DSL versions that have shorter limits.

Over 99% of all customers are within 22,000 feet of a phone central office, and this percentage drops to less than 50% for 12,000 feet.

But the thing that seems most promising about the

Copper Mountain approach is that the company sees this as a data service and not some mixed-media service. Copper Mountain is dealing with ISPs, not telephone companies, and uses frame-based transport rather than ATM. Frame-based is less expensive and less complex to deal with than ATM.

DSL deployment numbers are still small, far smaller than cable modem deployment numbers, for example. But developments such as those taking place at Copper Mountain and perhaps the DSL-lite technology under development by Microsoft and others, may mean that DSL will have a better future than it has a present.

Disclaimer: Harvard has a long history of dealing with the future but has no opinion on DSL technology.

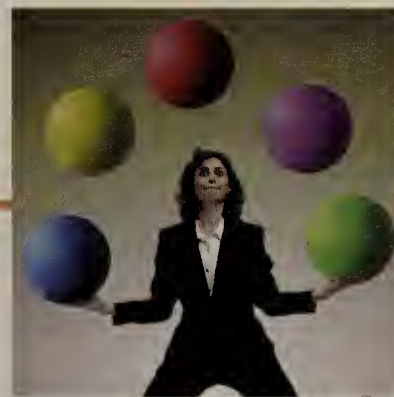
*Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.*



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*Research tools*

# The competitive intelligence edge

**I**t's the extroverted cousin of knowledge management.

Around for years in one form or another, competitive intelligence increasingly is being seen as a necessity by many corporations trying to keep up with rapid changes in their markets.

Whereas knowledge management deals primarily with the collection and organization of information within an enterprise, competitive intelligence is all about collecting outside data — information about competitors' strategies, regulatory issues, emerging technologies, customer or supplier activities, or changes in the market — in order to take action.

"Competitive intelligence enables corporate decision-makers to make better decisions and reduce some of their risk," says Ava Youngblood, president of the Society of Competitive Intelligence Professionals and former manager of business intelligence at Amoco.

Right now competitive intelligence is much more popular among the largest corporations, she says, though it is making inroads among smaller U.S. businesses as well.

Among the industries in which competitive intelligence is most used are financial services, IT, chemicals/pharmaceuticals, and consumer products and services.

The reason the big boys are playing the competitive intelligence game? The big bucks.

Competitive intelligence was "worth up to \$50 million per year to our company," says Robert Flynn, recently retired CEO of NutraSweet.

Though Anne Selgas says she can't put a dollar figure on the value of competitive intelligence, the director of corporate competitive intelligence for Eastman Kodak believes "companies that don't use competitive intelligence are running blind."

While competitive intelligence can be decidedly low-tech — reading trade publications and talking to suppliers and customers, for example — software and Internet technology are adding a cutting-edge element.

However, a recent survey of 120 competitive intelligence professionals by Fuld & Company of Boston shows that no software companies have successfully targeted the competitive intelligence market.

Indeed, the products cited most often by survey respondents were Microsoft Access, a database management package; a knowledge management application from Wincite Systems; and Lotus Notes.

For now, at least, the real action in competitive intelligence is focused on services rather than software.

Among the companies using the World Wide

*By Chris Nerney*

Web to deliver competitive intelligence services to corporate clients is Current Analysis, an online competitive intelligence firm specializing in the IT industry.

Based in Sterling, Va., Current Analysis' core expertise "is in-depth analysis of vendor actions from a tactical as well as strategic perspective," says CEO (and Network World Fusion colum-

## THE NEED TO KNOW

**An annual survey by business consultancy and think tank The Futures Group shows only a gradual increase in the adoption of competitive intelligence among U.S. companies. Sixty percent of the 101 senior executives responding to the 1997 survey reported having an organized competitive intelligence system in place. That figure was up from 58% in 1995, the first year of the survey.**

### Other survey highlights:

- ▶ 82% of companies with revenue of more than \$10 billion have an organized competitive intelligence system.
- ▶ 17% of companies don't think competitive intelligence has been used against them.
- ▶ 57% of companies said they need better intelligence on competitors' activities.
- ▶ 22% cited a lack of resources and 20% cited an inability to pull all information together as top intelligence obstacles.

nist) Fred McClimans.

So if there's a big telco merger, for example, or a major product announcement from Cisco, a cadre of Current Analysis experts will put together a package of information and opinion giving clients the lowdown on what it all means.

The key, McClimans says, is speed. Current Analysis, which promises a turnaround time of 24 to 48 hours following an industry event, offers four specific online services at [www.currentanalysis.com](http://www.currentanalysis.com).

### A universe of information

Before there was the Internet, there was Lexis-Nexis.

Begun in 1966, Lexis-Nexis' dial-up information service originally catered almost exclusively to the legal world and information specialists such as journalists and corporate librarians.

Its stock in trade was a vast database of news stories from thousands of publications around the globe; public records such as deed transfers, judgments and liens; legal case histories; and business credit reports.

When the Internet began to flourish in the mid-1990s, many people thought it was the beginning of the end for the Dayton, Ohio, information services company.

But rather than fight the 'Net, Lexis-Nexis has shrewdly integrated Web technology into its product and service offerings, thus expanding its base of potential customers.

In September, the company released Lexis-Nexis Universe, its first full-blown Web offering. Universe offers users with a standard browser access to thousands of news publications, public records, legal databases and medical information — very little of which can be found on the 'Net.

### Primary sources of competitive intelligence info

88%	Publications
82%	Company employees
82%	Suppliers/customers
82%	The Internet
80%	Industry conferences
79%	Industry experts
70%	Commercial databases

More than one response allowed.

SOURCE: THE FUTURES GROUP, GLASTONBURY, CONN.

### The doctor is online

One of the best ways to find out what your competitors are doing is to research their patents — if you can find them. That's where Manning & Napier Information Services comes in.

The Rochester, N.Y., company specializes in intellectual property information searches, according to CEO Michael Weiner. Among the company's customers are firms in the pharmaceutical, semiconductor and software industries.

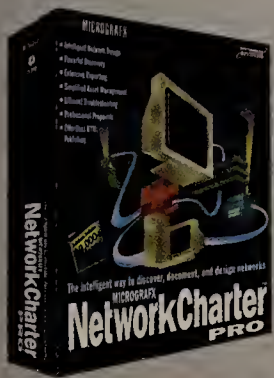
Manning & Napier's flagship product is DR-LINK, an online search tool that uses natural language processing to find information from a variety of sources, including newswires, magazines, journals and the Internet.

It is in sometimes obscure research papers and articles that key competitive information can be found, Weiner says. "You want to see where the competition is spending its research and development dollars, and the patents are a very good indication of that," he says.

Finding out what your competition is doing so you can respond, Weiner says, is the essence of competitive intelligence. ■



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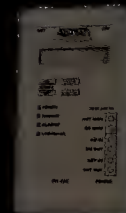


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# Technology Update

Covering: Evolving Technologies and Standards

## NUTTER'S NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Microsoft Certified Systems Engineer in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 7476, or send your questions to [helpdesk@networkref.com](mailto:helpdesk@networkref.com).

The Help application in Novell's NetWare Administrator says I can create a user using another user as a template. It also says I can create a template object by choosing "Template" from "Create new object." However, the template object does not appear on the list of new objects available to create, and if I try to use a user as a template, it doesn't show up in the browser! Is this ability an add-on? Surely it is a default on setup.

Perry Rowe, Southmark Solutions

It is possible to create a user from a template. In earlier versions of NetWare, you could do this by creating a user called USER\_TEMPLATE. Although this was a user object, it was usable as a blueprint for creating additional users and eliminated the need to enter all the information necessary to create an individual user.

In NetWare 4.11, Novell removed this single USER\_TEMPLATE object limitation. Instead, it developed a special Novell Directory Service (NDS) object that allows the creation of multiple templates. This gives you the ability to create specialized blueprints.

On its support site at <http://support.novell.com>, Novell has posted a technical document that briefly discusses how to create the missing template object in NDS. I have done this several times and have found the easiest way to do so is to map drive f: to sys:system\schema and drive g: to sys:public. Then you have to change to drive f:.

A quick directory of f: will show a series of .SCH files, such as nam.sch and nal.sch. Enter the following command: G:NDSSCH.NAM.SCH, and then press "Enter." Repeat this sequence until you have gone through all of the .SCH files in the schema directory.

## Transaction protocol boosts e-commerce

By Keith Evans

Current transaction technologies don't work well in heterogeneous or distributed application environments, especially those that use the Internet as their main form of communication.

That's where Transaction Internet Protocol (TIP) comes in.

TIP is a lightweight transaction protocol that is simple because it specifies only how

nel. With the one-pipe model, the user must employ only those three communications protocols. In a highly diverse environment such as the Internet the one-pipe model effectively prohibits the use of transactions. For example, with the one-pipe model, HTTP could not be used for applications communications. The transaction is either completed or not, and the end user has no idea what happened

tions, the agency provides screens to Web browser clients, letting users open and close an electronic shopping basket, in between filling the basket with goodies selected from the various services offered. One example would be a travel agency that lets a client select the components of his travel itinerary from services offered by airline/hotel servers, and execute or confirm the itiner-

the TIP recovery protocol is run only between the agency and the provider servers.

In order to promote the application use of TIP, a TIP URL is specified that defines the information necessary to propagate TIP transactions. The URL is passed between cooperating applications.

The TIP protocol also has characteristics that support high performance. For example, multiple TIP transactions may be multiplexed over a single TCP connection, or multiple TIP commands may be pipelined together to reduce network latency and resource consumption. As HTTP evolves into an efficient server-to-server communications protocol, the Internet will be even better able to support enterprise transaction processing.

The use of TIP confers the following benefits over current standard and proprietary transaction protocols:

- An application may choose whatever protocol mechanism is most appropriate to communicate with a partner.

- There is no predetermination regarding which application components are to participate in a transaction. The only requirement is that each distributed system supports a TIP-compliant transaction manager, which manages the coordination of local resource managers with remote TIP transaction managers.

As new communications protocols are developed, they can be used with TIP to provide transactional versions of such protocols. The need for development and implementation of a new transaction protocol for every new communications scheme is obviated.

Microsoft, Iona Technologies, Unisys and Compaq's Tandem and Digital divisions have announced plans to support the protocol.

Evans is a senior software architect with Compaq's Tandem division. He can be reached at [Keith.B.Evans@Compaq.com](mailto:Keith.B.Evans@Compaq.com)

### HOW IT WORKS Transaction Internet Protocol

TIP is being touted primarily by Microsoft and Compaq as an easy way to confirm transactions that cross multiple Web servers and transaction processing systems. Currently, TIP is making its way through the IETF as RFC 2371. The driving idea behind TIP is to create a ubiquitous transaction system that would speed and simplify electronic commerce.

different nodes or servers agree to confirm transactions. The protocol requires applications to communicate via more than one protocol. This technique is called a two-pipe model — applications communicate on one pipe, TIP transaction managers on the other. Therefore, TIP may be used with any application communications protocol, such as HTTP.

Today's standard transaction protocols, such as Open Systems Interconnection Transaction Protocol or Common Object Request Broker Architecture Object Transaction Service and IBM's LU 6.2, employ a one-pipe model. This means application communications and the transaction protocol flow over a single communications chan-

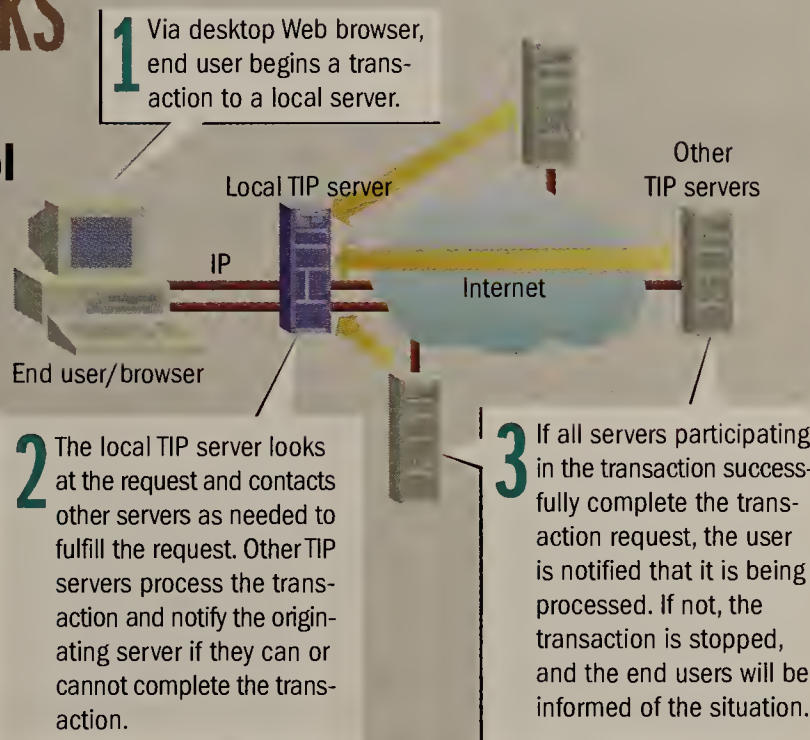
nel. With the one-pipe model, the user must employ only those three communications protocols. In a highly diverse environment such as the Internet the one-pipe model effectively prohibits the use of transactions. For example, with the one-pipe model, HTTP could not be used for applications communications. The transaction is either completed or not, and the end user has no idea what happened

TIP solves these one-pipe problems and has been published by the Internet Engineering Task Force as proposed Internet standard RFC 2371.

While TIP may not replace existing transaction services, because of its simplicity the protocol is expected to be relatively easy for many vendors to implement in their transaction manager packages, thereby bringing about multivendor interoperability.

TIP enables the development of "Web agency" applications, which act as brokers for the services of other products.

With Web agency applica-



ary as a transactional unit.

Once confirmed, the agency application starts a TIP transaction and works with the airline/hotel servers to update their databases. If the selections are OK (for example, there are flights and rooms available), the server accepts the transaction. Providers to the agency simply need to write their service applications to recognize a TIP URL (present in an HTTP datastream), and employ interfaces provided by a local TIP-compliant transaction manager to join the transaction. The various distributed transaction managers then take care of transaction completion, and either all or none of the travel itinerary is confirmed. Should a failure occur,





## NDS: Novell's last, best hope

**I**n our Oct. 26 issue, we quoted Yogesh Gupta, Computer Associates' vice president of marketing, as saying, "I have to have my own repository. I can't tell my customers they have to use NDS." Gupta doesn't get it. If I were one of his customers, I'd say, "Don't tell me I have to use your repository. I want to use one I already have."

This is and always has been the promise of a network directory service — to provide a single repository that all applications use. If a directory service only makes it easier to manage one specific network operating system (NOS), it's not very useful. But if all the third parties that write software for the NOS exploit the directory, it's a powerful tool indeed.

Perhaps Gupta objects to the fact that Novell Directory Services (NDS) runs on top of NetWare. Now that NDS is available for Windows NT (and Microsoft's Active Directory isn't), it's hard to see how that argument holds water. To snag CA, an adroit Novell would surely license NDS to CA's customers at a very reasonable fee.

But the fact that someone in as responsible a position as Gupta doesn't get the benefit of a NOS-integrated directory service says something about marketing at Novell. These next few months will be Novell's last, best opportunity to make a stand against the

incursion of Windows NT in shops that used to be ruled by NetWare. In order to succeed, the company needs to spread the directory service gospel far and wide.

Novell need only look at one of the competitors it left by the wayside for a cautionary example. Banyan's StreetTalk was the first enterprise directory service. Now VINES, the NOS based on StreetTalk, is all but dead, and Banyan is struggling to reinvent itself as an Internet company. Banyan's technology was excellent; the firm's Achilles' heel was poor marketing and an inability to make alliances with other software companies.

It's clear that Novell CEO Eric Schmidt does get it. He's mobilized his people to bring more third-party developers into the fold. Whether Novell will prevail is not yet clear. Novell needs to provide toolkits, incentives and support to make integration with NDS attractive. If the company succeeds, the improved manageability of NetWare will outweigh the perceived ease of use of NT Server.

If not, Novell's Year 2000 problem is going to be finding a buyer for the company, because one thing Microsoft has always been good at is finding allies in the developer community.

*Lee Schlesinger, test center director*

*lee\_schlesinger@nww.com*

*The Internet • Carl Shapiro & Hal R. Varian*

## Interconnection is likely to follow lessons of history

**T**he fundamental principle of network economics is that bigger networks offer more value to users than smaller ones. As a result, firms in network industries have a tendency to interconnect. Railroads and airlines hammer out interlining arrangements; banks form clearinghouses and agree on settlement terms for credit cards and ATMs.

But the very fact that connectivity is so valuable makes the threat of nonconnection a powerful strategic weapon. How did network industries in the past resolve this tension? Start with telephony. About a century ago, several Bell patents expired and a number of firms entered the telephone business, posing a serious competitive threat to Bell's dominance. By 1903 Bell companies controlled less than half the phones in America, and over half of incorporated cities and towns had more than one telephony provider.

Bell's ace in the hole was long-distance service, where it was the undisputed leader. Bell used this advantage to offer interconnection to nonaffiliated companies that were not direct competitors in the local market. But the Bell system refused to interconnect with firms that were direct local competitors.

As a result, Bell's local rivals were at a disadvantage in the battle for customers. This disadvantage became more pronounced as the quality of long-distance calling improved and the price came down. Before long, the Bell system had parlayed its dominance in long-distance into local service as well. Then Bell went back and picked off the smaller, local companies, which, by that time, had no choice but to be bought out.

About the same time, Marconi International Marine Corp. was attempting to solidify its lead in wireless communication. Like Bell, Marconi refused to interconnect to other direct competitors. The company licensed rather than sold its equipment so as to maintain control over how the equipment was used. Furthermore, Marconi built strategic alliances as part of its business strategy, working with Lloyds of London to require that insured ships at sea use only the Marconi network.

Eventually, both networks fell under government regulation: Bell became a government-regulated monopoly, and Marconi was required to interconnect with other systems by the U.S. Radio Act of 1912.

What can we extract from these experiences for the future of today's Internet? First, if one backbone ISP gains a dominant position, that firm is likely to be reluctant to interconnect with its competitors. Rather than flat-out refusing to interconnect, this reluctance may manifest itself in the form of lower quality interconnection. Interconnection concerns were at the heart of the Justice Department's enforcement action regarding the MCI WorldCom merger. Today's debates over the terms of interconnection are merely the early phases of an ongoing struggle.

Second, the jockeying for position and market share will lead to a tangled web of alliances and joint ventures between both infrastructure providers and sellers of complementary goods and services. Historical experience, ranging from the Universal Postal Union to the Visa credit card system, suggests that multi-lateral agreements can greatly simplify interconnection terms and conditions.

Third, if the industry can't get its own act together, governmental intervention is likely. The Internet, like the telephone and radio networks before it, is just too important to leave to the private sector. One can applaud this or bemoan it, but the historical evidence certainly suggests that governments will, sooner or later, play a significant role unless the industry manages to work out a sensible interconnect policy.

*Shapiro and Varian are the authors of Information Rules: A Strategic Guide to the Network Economy, released this week by Harvard Business School Press (see [www.inforules.com](http://www.inforules.com)). They can be reached at [shapiro@haas.berkeley.edu](mailto:shapiro@haas.berkeley.edu) and [hal@simms.berkeley.edu](mailto:hal@simms.berkeley.edu).*

MESSAGE

Send letters to [nwnews@nww.com](mailto:nwnews@nww.com) or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

### Shut up and code

I'm tired of hearing about Microsoft's directory features and add-ons, such as its vaporware Active Directory Connector for Novell Directory Services ("NDS gets Microsoft's ear," Oct. 19, page 1).

Microsoft hasn't even shipped a working version of Active Directory. Microsoft should keep its mouth shut and code.

*Thomas Jackett  
Hubertus, Wis.*

### Why Cisco leads

Your editorial "Has Cisco sewn up the enterprise?" (Oct.



# Enterprise caching: Smart or smoke?

One of the hot infrastructure elements of ISP networks is the cache server. Cache servers are supposed to reduce network traffic, improve application performance, and make users happy and vendors profitable. Now cache vendors want to extend these benefits to enterprise networks, specifically intranets. But before you make the cache commitment, take a closer look at the issues involved.

Caching is something everybody with a Web browser has done. When you load a URL from the Internet, your browser places a copy of the content in a directory. If you come back to that URL later, you'll load a disk copy instead of pulling a new one over the Internet. This makes complex pages load faster and reduces traffic on the Internet.

However, caching is limited. With browser caches, the cache stores one user's pages and is accessible only to that user. If the user at the next desk loads a page you've loaded a second before, he has to get another copy of it.

To make caching more efficient, you put a kind of "collective cache," or cache server, at a place where many users would pass through to access Web content. The cache server stores pages accessed by any of the users whose requests and responses pass through them.

Caching can produce dramatic savings for an ISP. So it would seem that enterprise caching is a no-brainer. However, the situation in an enterprise intranet isn't the same as in an ISP. Here are some points to consider before adding caching to your network.

First, caching is useful only if there is a place you can put a cache server so that many URL requests and server responses will pass through it. If your network doesn't focus a lot of client/server traffic across a few pipes, you'll need a lot of cache servers to cover all the information paths. This division of traffic will increase the risk that Client A will ask for a page that has been retrieved by Client B but is cached in a server that isn't on Client A's path and therefore can't be used.

A second issue is repetitive use of common content. If two workers access a common repository of pages and often retrieve the same data in succession, caching could cut out almost half the traffic. But if one worker is browsing the personnel manual and the other the company's product catalog, there won't be any common content and caching won't reduce the number of times the servers are accessed and the network is used to trans-

port the content.

With the Internet, in most cases, the content associated with a given URL changes only infrequently, and there are many URLs (including those for major companies such as Microsoft, IBM and Cisco) that are accessed regularly by many users. With enterprise intranets, there are fewer boilerplate pages, and often, less-glitz graphics. Hence, there is less cache benefit.

In fact, the key application of most successful intranets normally can't be cached at all. Many intranet users are using the Common Gateway Interface (CGI) or Java to do database queries and deliver the results to client browsers as HTML. These kinds of content pages are constructed anew with each query, and there's no way to cache the content to reduce access. Even if there were, there would be a risk that the database was updated between requests; the second user would then see an out-of-date record.

Another issue of caching is security and journaling of use. If the content server is applying any form of security screening to requests for pages, or if it is counting the number of accesses for billing, a cache will defeat the process by intercepting the request and filling it without security checks or counting.

The final issue with caching is cost. Let's suppose you have an intranet application that combines host data obtained from a query with help files and other material. While the query data couldn't be cached, how about the rest? The answer may be that it would be better to store such content locally rather than to cache it.

If you build an intranet application and design the pages and hyperlinks, you can allow each branch office, workgroup or even worker to store common boilerplate content on an existing server or client hard drive. No new cache server would be needed and no additional cost incurred.

There are applications where a cache may be helpful. If a database of product information is updated relatively infrequently but is too large to distribute and control, it may help to provide caching if this database is accessed frequently and the number of workers who access it per location is high. But for most users, the enterprise cache is a solution in search of a problem.

*Nolle is president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He can be reached at (609) 753-0004 or tnolle@cimicorp.com.*



19, page 70) states: "Rivals see Layer 3 switching as a way to ravage Cisco's high router margins," and customers are asking themselves whether they should "wait for Cisco to match what rivals offer."

Maybe I'm missing your point, but it seems to me that Cisco's Catalyst 8500 and the NetFlow feature cards for the Catalyst 5XXX switches are a reasonable Layer 3 offering. Maybe the backplane speeds aren't as great as some rivals' products, but from what I have seen, the feature sets the rivals offer aren't quite up to par with Cisco's.

We all know that when simply measuring packets per second, Cisco products do not always rank No. 1. But I think Cisco continues to do well because those of us in the trenches know that amazing packets-per-second ratings don't help if a product doesn't conform to standards; can't handle all protocols that we have in-house; can't perform

advanced filtering; and doesn't offer good debugging tools.

Is Cisco getting too cocky? Maybe. We certainly don't want it to become another Microsoft. But right now Cisco is doing two things that have helped it stay on top. First, Cisco's customer service (for my organization, anyway) has been second to none.

Second, according to what I've heard from [CEO] John Chambers, Cisco refuses to enter a market in which it can't be one of the top three vendors. That certainly reduces its chances of losing money and other resources on risky business ventures.

As long as Cisco continues to give me the products I need, when I need them, at reasonable prices and support those products well, it will continue

to get my business.  
*Don Davis*  
*Knoxville, Tenn.*

## No bargain

Regarding Mark Gibbs' column "A sermon on Linux: Part 1" (Oct. 26, page 72):

My organization can't afford Linux; it is just too gosh darn expensive. Let me explain.

We ordered Caldera's OpenLinux Lite 1.2 for about \$15 and tried to set it up on an IBM 486/66 ValuePoint. After a couple of false starts, the installation program began. About 30 minutes later, error messages began to appear and the installation halted. We could find no resource for decoding the error messages.

We joined the Caldera users group mailing list and asked for assistance with the errors.

Nobody had ever heard of this problem.

We investigated buying the full version of the Linux package from Caldera, which includes install support. It costs about \$165. As an academic institution, we can purchase a

license for Windows NT Server for \$95.

*Bill Nelson*  
*Director of information technology services*  
*Tokyo International University of America*  
*Salem, Ore.*

## Teletoons



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# Keep at it, carriers

*T-1, T-3 and frame relay data network service providers need to work a little harder to make the Honor Roll.*

By Susan Ellerin

**C**arriers may provide adequate service and support, but none go the extra mile for their data network services customers. That's the gist of Part 2 of the Network World Service and Support Survey, co-sponsored by Deloitte Consulting.

The first installment, published on June 15, focused on readers' satisfaction with their inter-network hardware, server and groupware vendors. We gave special Network World Honor Roll recognition to vendors that earned an average satisfaction grade of at least 85 for 19 service and support attributes. On the whole, even the top performing vendors had plenty of room for improvement.

Curious to see how carriers would fare, we conducted a second survey to gauge readers' satisfaction with data services, including T-1, T-3 and frame relay. As in the first study, grades range from a possible low of 50 (not at all satisfied) to a high of 100 (extremely satisfied). And just as before, carriers needed average grades of 85 or higher to make our Honor Roll. On our grading scale, 90 or greater counted as an A; 80 to 89 a B; 70 to 79 a C, 60 to 69 a D; and anything below 60 warranted an F.

No long-distance carrier or regional Bell operating company scored consistently high enough

to earn a spot on the Network World Honor Roll, although AT&T, BellSouth and Sprint came close. On the other hand, no company was flunked for particularly abysmal service, either.

Overall ratings of T-1 and T-3 services range from AT&T and Sprint's near-Honor-Roll scores of 84 each down to GTE's and US WEST's fair-to-middling averages of 76 each.

Frame relay scores span a slightly narrower

range — from the solid B grades earned by AT&T, MCI and Sprint down to Bell Atlantic's mediocre average of 77.

We also asked about user experiences with ATM services, but the number of ATM users was not statistically high enough such that we could report those results separately. However, responses regarding ATM services are included in the top-line grades shown on page 51.

### Get more online:

Information on Deloitte Consulting, the sponsor of this year's Service and Support Survey series. Deloitte is one of the world's leading management consulting firms. Its networking practice focuses on applying telecommunications solutions and expertise that meet today's business challenges. The firm has networking centers of expertise in 15 offices around the world.

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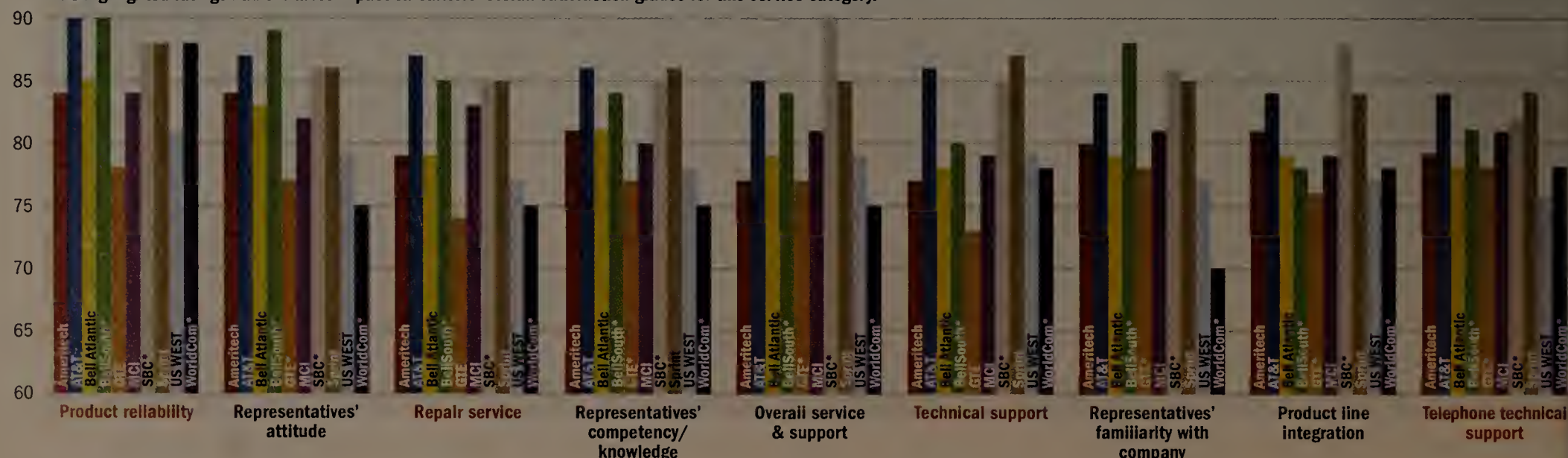
### Reputations hinge on reliability

Carrier service and support is generally regarded as good, but rarely do readers call it spectacular. And less-than-superb service threatens to impact a corporate customer's bottom line, potentially lowering productivity, undermining employee morale and putting the network in a state of siege.

It isn't enough to provide a reliable data network at a reasonable cost. To be viewed as superior, carriers need to stand behind their work, guarantee performance and quickly remedy problems when service isn't up to par. Although

### T-1 AND T-3 REPORT CARD

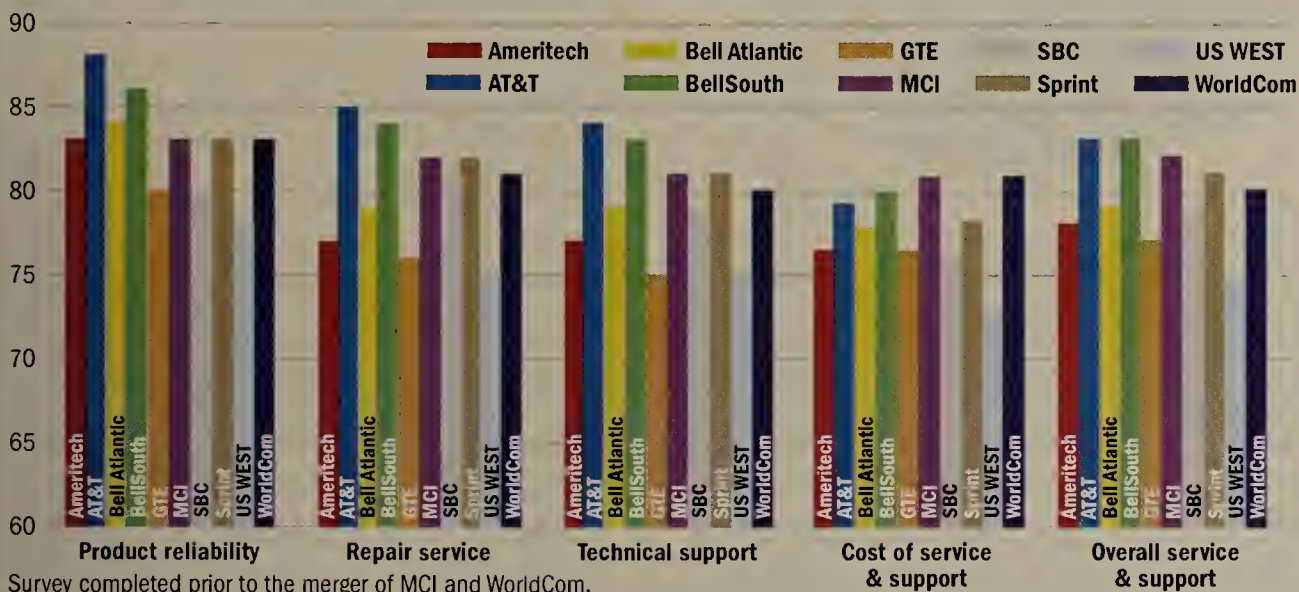
Readers rated their primary carriers on many distinct support attributes that we used to calculate overall average satisfaction grades. The highlighted ratings had the most impact on carriers' overall satisfaction grades for this service category.





## TOP-LINE GRADES FOR DATA NETWORK SERVICES

Here's how carriers fared when readers rated all the carriers they use on four key areas. Differences of more than 2.5 are statistically significant (Includes ATM, T-1, T-3 and frame relay services.)



Survey completed prior to the merger of MCI and WorldCom.

product reliability is crucial to customer satisfaction, it's service that distinguishes vendors and inspires loyalty.

To measure customer satisfaction, we asked all survey respondents to grade each carrier they use on four key areas: product reliability, repair service, technical support, and cost of service and support. In addition, we asked users to give their impressions of each carrier's "overall service and support" without defining what specifically we meant by this formulation (see graphic, above).

Almost without exception, product reliability was the single biggest determinant of customer satisfaction. Data network services users tended to judge most carriers' repair services and technical support efforts similarly, but those attributes scored significantly lower than product reliability.

Disparately low ratings are typically related to cost. For example, the carriers with the best overall grades for data network services — AT&T and BellSouth — earned the lowest of their five main ratings for cost of service and support.

### A good attitude goes far

To score high in satisfaction, carriers would

do well to pay close attention to the folks who answer customer calls for help. When users call a carrier's technical support department, they want to speak with someone who is pleasant, knowledgeable and familiar with their companies.

The T-1/T-3 and frame relay service front-runners all earned high ratings for exceptionally

good repair service and technical support.

But not one of the top four carriers in either data network service category achieved its position without garnering relatively high ratings for two or more attributes of their support representatives.

### The primary results

Many readers have used data network services from Ameritech, AT&T, Bell Atlantic, BellSouth, GTE, MCI, SBC Communications, Sprint, US WEST and WorldCom. (The survey was conducted prior to the MCI WorldCom merger.)

However, each carrier has a substantially smaller number of primary users — that is, readers who rely predominately on a particular carrier's T-1, T-3 or frame relay services. These are customers we'd expect to have the experience necessary to reliably evaluate a variety of more specific service and support attributes.

To develop a more in-depth picture of how the major data network service providers stack up, we asked users to grade their primary carriers on many distinct attributes, including the core factors previously discussed.

First, we asked about the most basic component — the reliability of the services themselves. Then we examined various other characteristics, including qualities of the customer service representatives, basic repairs, service and support,

## One satisfied customer

From a data center in Bellevue, Wash., Craig King, telecom supervisor for Electronic Data Systems, manages frame relay connections to 800 ATM machines at banks and credit unions across the western part of the U.S. The 56K bit/sec connections provide real-time banking transactions.

Overall, King rates US WEST's frame relay service as "excellent." US WEST actually calls him when there's an outage. If a circuit goes down in its territory, the carrier tells King which circuit is out and automatically opens a trouble ticket.

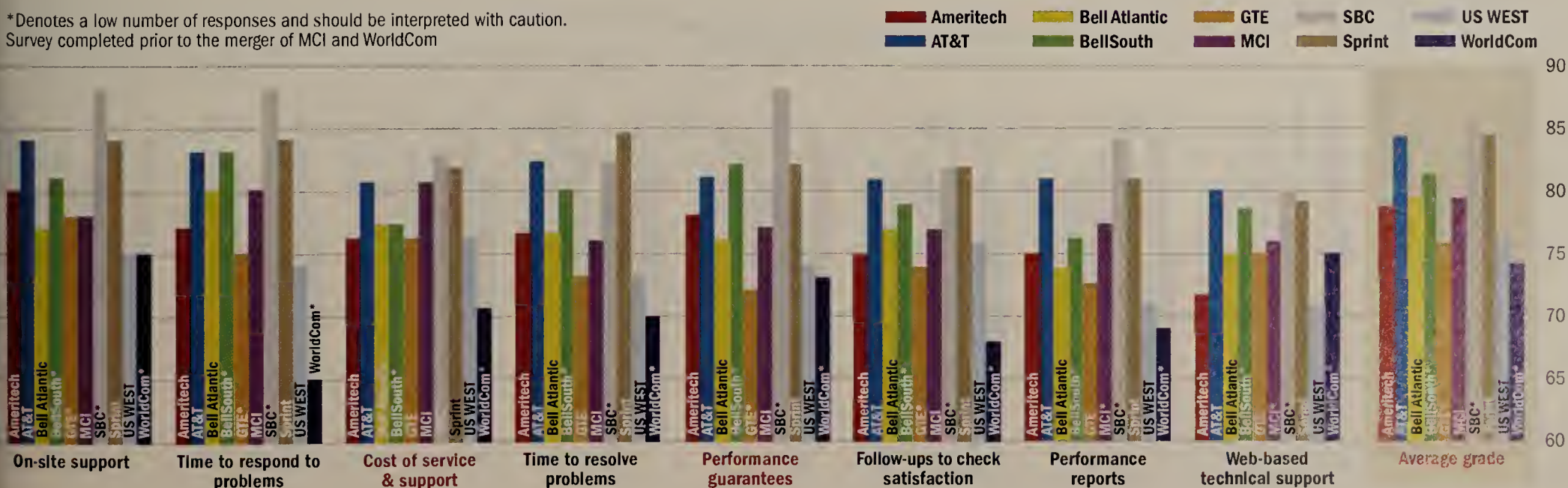
That's his definition of superior customer service.

— Neal Weinberg



KATHLEEN KING

\*Denotes a low number of responses and should be interpreted with caution. Survey completed prior to the merger of MCI and WorldCom





and problem handling. Finally, we combined those individual ratings to get the average satisfaction grades.

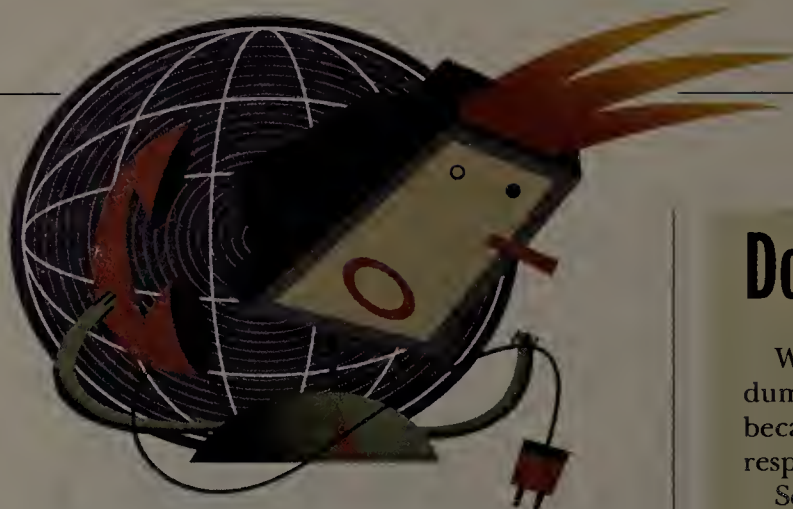
Overall, across categories, readers tend to be most satisfied with service reliability and far less satisfied with the way carriers handle specific problems. Satisfaction is lowest with the more recently developed Web support avenues.

However, certain key individual characteristics highlighted in the report cards were closely tied to overall satisfaction with carriers.

## T-1/T-3 leaders

With their matching scores of 84, AT&T and Sprint led the way in T-1 and T-3 mean satisfaction grades, but BellSouth followed closely with an average grade of 82, outpacing US WEST and GTE, with their scores of 76. (SBC earned the top mark of 85, but this was based on such a small sample of primary users that the results aren't statistically significant. Similarly, WorldCom garnered the lowest mean grade with a 74, but the sample size wasn't big enough to interpret with confidence.)

While none of these marks is high enough to earn any carrier a place on the Honor Roll, it's clear that improvements in only a few areas



would have placed several companies on the list. AT&T and BellSouth, for example, could substantially boost satisfaction simply by reducing the time it takes them to respond to problems.

Interestingly, respondents rated product reliability at or near Honor Roll level for every carrier except GTE. However, other areas of relative strength and weakness varied considerably from vendor to vendor.

For example, BellSouth scored relatively poorly in its follow-up activities and performance reports. Moreover, low-performing Ameritech won one of the highest marks for product line integration.

Sprint could have achieved Honor Roll status by making modest across-the-board improvements.

Virtually all of the T-1 and T-3 service

## Doing whatever it takes

When Scoular Co. was thinking about dumping Sprint's frame relay service because of reliability problems, the carrier responded.

Scoular, which trades and stores agricultural products, is based in Omaha, Neb., and has another major facility in Overland Park, Kan. The firm also has more than 30 other offices sprinkled across the country.

When the company told Sprint it was concerned about reliability, Sprint beefed up its backbone network between Omaha and Overland Park. The long-distance carrier also gave each of Scoular's office managers the name and number of a Sprint customer service representative who would be available 24 hours a day, says Leland Morrison, office manager at Scoular in Orchard Park, N.Y.

That was about 18 months ago, and Morrison says he hasn't had any problems with the frame relay service since.

— Neal Weinberg

## Waiting by the phone

Jack Lawrence has a pretty straightforward definition of excellent technical support: "When you call somebody, get a human within 5 minutes, and they work on the problem then. It's not getting a trouble ticket and having somebody get back to you in four hours."

As you might guess, Lawrence has endured the four-hour-wait scenario more times than he wants to remember. Lawrence, the systems administrator at aluminum construction products manufacturer Item Products in Houston, has private-line service from AT&T.

AT&T could do a better job with service reliability, he says. In the seven years he's had private lines from AT&T, there have been cable cuts and other outages.

Lawrence also complains that customer service is questionable at times. He theorizes that AT&T has laid off so many employees that there aren't enough workers left to provide quick response times.

— Neal Weinberg



providers could probably make great strides by paying more attention to areas in which no carrier currently excels. For example, Web technical support is uniformly among the lowest rated support areas. Similarly, performance reports and guarantees, as well as follow-ups to assure that problems have been solved satisfactorily, are areas in which almost no vendor earned more than a C rating.

## Frame relay leaders

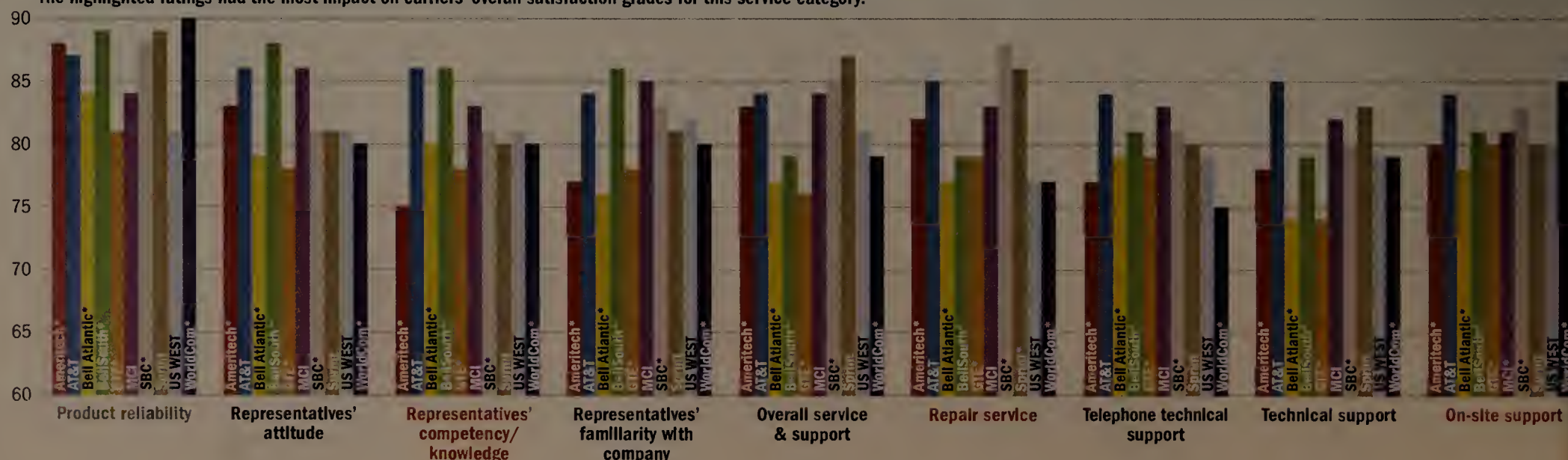
Respondents who use frame relay services, while significantly fewer in number than those with T-1 or T-3 lines, are most satisfied with AT&T, whose mean grade of 83 tops the roster. BellSouth and MCI follow close behind with mean grades of 82, while Sprint notched a mean of 80.

All of the other frame relay suppliers achieved average scores ranging from 77 to 79.

It may be noteworthy that primary users are

## FRAME RELAY REPORT CARD

Readers rated their primary carriers on many distinct support attributes that we used to calculate overall average satisfaction grades. The highlighted ratings had the most impact on carriers' overall satisfaction grades for this service category.





# Frame relay outage costs AT&T a customer

AT&T's infamous frame relay network outage last spring was the last straw for Aaron Roberts, manager of IS at the J. Hill Group, a business consulting firm in St. Paul, Minn.

"It was a sad, sad day," says Roberts, who lost business due to the outage. His company had already been having problems with its frame relay service, so "after that point, we were gone."

When the outage occurred, Roberts says AT&T did everything it could to notify customers, but he still couldn't get past the notion that a supposedly redundant network had simply crashed.

The J. Hill Group also had minor problems concerning router configurations with AT&T's frame relay service. Initially, the routers had no passwords, so someone could have broken into the company's network by using a modem to connect to the router. "We caught it, but I was a little dismayed," Roberts says.

After the frame relay outage, Roberts decided to choose a less expensive, local data service. He settled on an ISP called gofast.net, which provides a virtual private network between the consulting firm's two locations.

"We had a problem one day where the firewall hiccuped. They had someone out in 10 minutes," he says.

— Neal Weinberg

more satisfied with the service and support of both US WEST's and MCI's frame relay services than with those carriers' support of T-1 and T-3 lines.

Sprint topped the list when it came to product reliability, earning a score of 89. (BellSouth also received an 89, but considering how few responses we received, the score is not significant.) Interestingly, Sprint's frame relay products garnered higher grades for reliability and repair service than its T-1 and T-3 service, although the company's frame relay service earned a lower average satisfaction rating.

AT&T's representatives provide good phone service, as revealed by the carrier's rating of 84 for telephone technical support and 86 for its representatives' competency and attitude.

The carriers' weak spots for frame relay were in general the same as they were for T-1 and T-3 service: Web support, follow-up, and performance guarantees. That said, readers clearly would welcome improvements to other areas as well.

Moreover, because the cost of service and support is a significant predictor of overall satisfaction ratings, vendors would be wise to focus their efforts on competitive pricing strategies.

## Satisfaction at any cost

For carriers to even approach the level of service and support that would earn them a posi-

tion on the Network World Honor Roll, readers demand excellence in three critical areas:

- Solid track record for product reliability.
- Exceptional support channels and fast repairs.
- Positive, top-notch representatives who know their products.

These are necessary — but not sufficient — criteria for the kind of genuine customer-centered service and support that creates satisfied users. And network managers are basing their expectations on far more than the behavior of carriers alone.

Just as getting a man to the moon decades ago raised the bar on commuters' expectations of crosstown transportation, the quality of service associated with ordinary business and consumer products will dramatically impact perceptions of data network service providers.

Now that it's the norm to be able to instantaneously trace a package you've sent or to drive a new car 15,000 miles without it needing a tune-up, there will be increasing pressure to raise the bar on service and support in network products across the board.

*Ellerin is president of STAT Resources, a Boston strategic research and consulting firm that assists clients with improving the quality of their service delivery systems, products, and customer and employee communications. STAT can be reached at [www.stat-resources.com](http://www.stat-resources.com).*

## Survey methodology

Boston-based strategic marketing research firm STAT Resources conducted this survey, collecting data in two waves. First, STAT mailed surveys to 1,000 *Network World* readers. Respondents were chosen from a random list of readers who work in various industries, including manufacturing, finance/insurance, service, education, government and transportation.

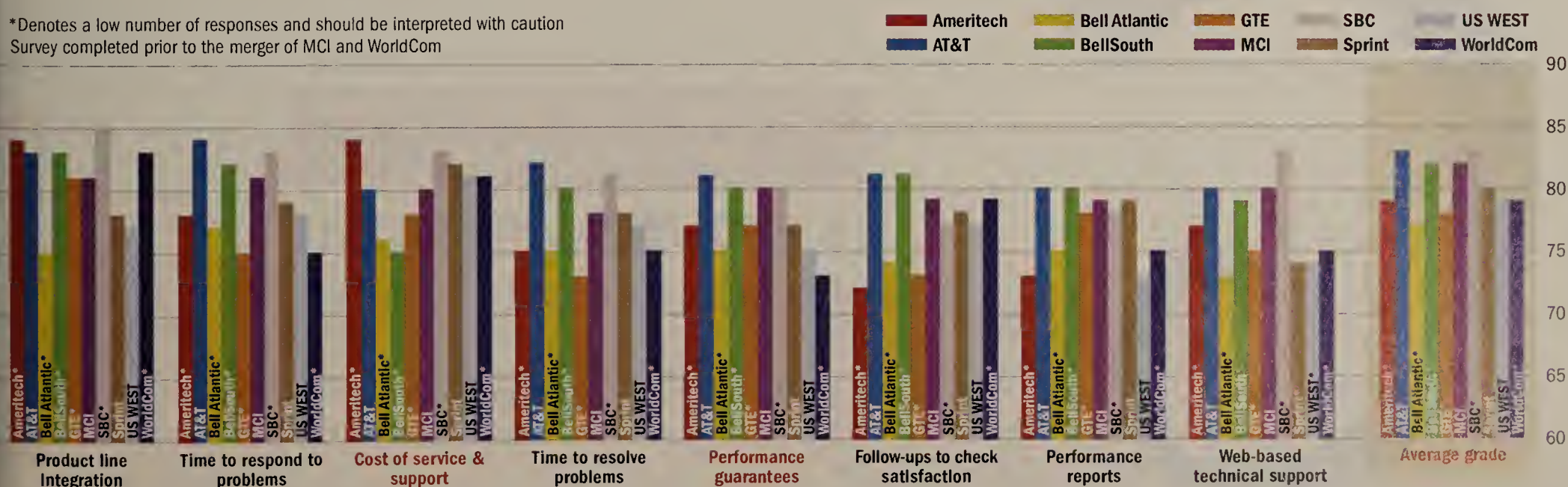
Unlike hardware and software product categories, data network services are highly regionalized. To ensure that we had a statistically reliable number of customers of each regional Bell operating company, as well as each long-distance carrier, STAT supplemented the mail survey data with regionally targeted telephone interviews with a randomly selected group of readers. The final carrier ratings were based on responses from 408 readers.

Scores were rounded to the nearest whole number. Any difference greater than 2.5 is statistically significant.

Results are presented in two stages. First, a top-line assessment was based on five grades given by all users. Then, users were asked to provide in-depth scoring of 14 additional service and support characteristics for their primary carrier. These 19 primary carrier grades were averaged to determine eligibility for the Network World Honor Roll.



\* Denotes a low number of responses and should be interpreted with caution  
Survey completed prior to the merger of MCI and WorldCom





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# REVIEW

TWO NETWORK ADAPTER LOAD-BALANCING APPS MAY BE THE TOOLS TO IMPROVE SERVER PERFORMANCE.

## Teaching server NICs to work together

By Tom Henderson

**U**nder normal circumstances, adding network interface cards to servers doesn't increase throughput or reliability because TCP/IP wasn't designed with NIC clustering capabilities in mind. Even if multiple server NICs have the same IP address, workstations tend to gravitate toward one, often the NIC with the lowest media access control (MAC) address. The result: One card gets the lion's share of work while others on that host remain underutilized.

We found two products that help alleviate the problem. NSI Software's Balance Suite 2.6 and IPMetrics Software's NIC Express 1.0 are designed to increase server throughput and increase reliability at the network layer under Windows NT Server 4.0 (Balance Suite runs under NetWare as well). During our tests, the products detected a failed NIC when the server was connected to a switch and distributed bandwidth among a cluster of network cards. But Balance Suite takes our Blue Ribbon on the strength of additional features—including a graphical monitoring application, dynamic network card rebalancing and PerfMon add-ins—that are lacking in the more spartan but less expensive NIC Express.

To provide fault tolerance, the cards detect

the failure of any NIC in a cluster. The cards send Address Resolution Protocol (ARP) packets to the list of workstations connected to the failed NIC, telling them the address of a functioning network card. Both products add a protocol driver file into the server's Network Property Protocol sheet that re-establishes connections to a remaining working NIC.

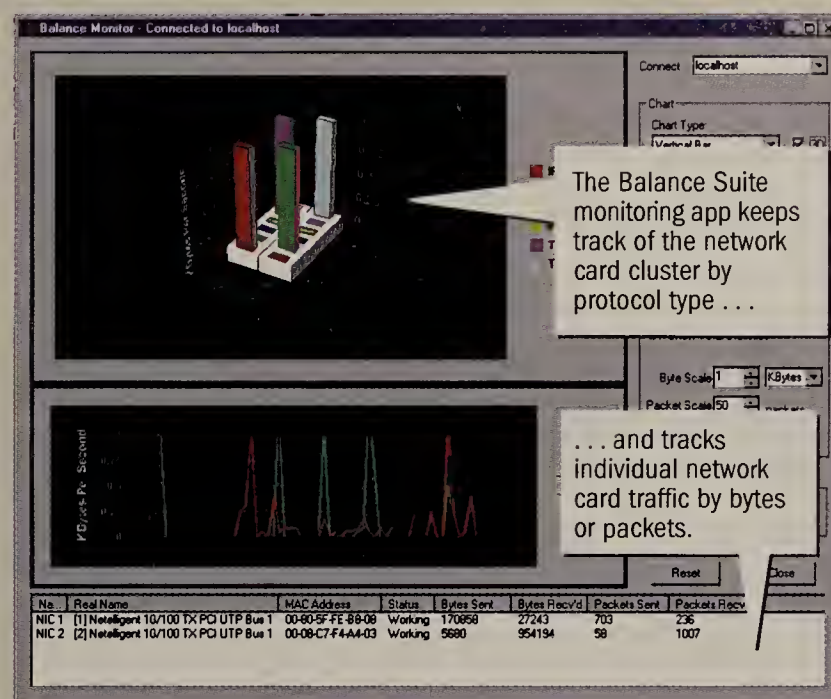
The business end of each product is a product-specific protocol driver file that runs between the TCP/IP stack and the drivers that

come with network cards. You can associate network cards with the adapter driver files to make a cluster. Balance Suite's intermediary driver is slightly smarter and more controllable, offering several more options than the equivalent driver in NIC Express.

NIC Express uses watchdog packets that loop back and forth among the network cards. When a loop isn't completed, the product knows

there's a communications problem with the NIC. NIC Express can also read status information, such as error conditions, from a network card if the card's driver is compliant with Microsoft's Network Driver Interface Specification 4.0 (NDIS). IPMetrics says if a network card driver is NDIS 4.0-compliant, it can

NSI'S BALANCE SUITE 2.6



### Net Results

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#### Balance Suite 2.6

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- ▲ Effective balancing features
- ▲ Highly configurable
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- ▼ None significant

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- ▲ Simple installation
- ▲ Inexpensive

- ▼ Spartan monitoring
- ▼ Requires NDIS 4.0 drivers for best performance

### Score Card



	Performance (30%)	Fault tolerance (30%)	Manageability (20%)	Features and flexibility (10%)	Installation (5%)	Documentation (5%)	Total score
Balance Suite	9 x .30 = 2.70	9 x .30 = 2.70	8 x .20 = 1.60	8 x .10 = 0.80	5 x .05 = 0.25	7 x .05 = 0.35	8.40
NIC Express	8 x .30 = 2.40	9 x .30 = 2.70	5 x .20 = 1.00	5 x .10 = 0.50	7 x .05 = 0.35	5 x .05 = 0.25	7.20

Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score.



sense an outage in less than half a second rather than the 2 to 4 seconds (or longer when the network is busy) needed with watchdog packets.

Both packages are able to detect an adapter failure very quickly. You can select the failure polling frequency in

Balance Suite, but not in NIC Express. Nonetheless, all three network card types we tested had NDIS 4.0 drivers, and NIC Express was able to reconfigure more quickly under load than Balance Suite. When we used an NDIS 3.1 driver to test the Compaq NetFlex-3 network

cards, NIC Express took several seconds longer to recover than Balance Suite.

In our small network, recovery was almost instant. We suspect it might take longer for both products to ARP a long list of workstations, especially if the workstations were distributed

through a WAN.

Balance Suite can also change the specific workstations attached to network cards to perform what NSI calls dynamic balancing. With this feature, instead of looking at just the connection count of each NIC, Balance Suite redistributes uneven workloads over a period of time to balance traffic.

Balance Suite has a bundled monitoring application that watches the network cards in the cluster and divides them by protocol type and volume (see graphic, page 55). In NIC Express, monitoring is limited to viewing the NIC Express adapter and its cumulative statistics, as well as colored icons that indicate a network card's condition — up, down, previously failed and others.

Both products let you monitor their actions via SNMP by linking the product's Management Information Bases (MIB) to the SNMP service in Windows NT. The Balance Suite MIB has many more data returns largely because the product has many more options than NIC Express.

While NIC Express installs more easily (the software includes an installation movie), Balance Suite shows more maturity by providing better activity monitoring, which is largely lacking in NIC Express. The difference is stark. You can get a status report from NIC Express only via the NT Control Panel's Network Protocol Properties tab. By contrast, Balance Suite has its own monitoring software, although it is CPU-intensive.

When connected to a 10M bit/sec

## Got NetWare? No problem

**T**he problem these products are designed to solve is present not only with Windows NT and TCP/IP, but with NetWare and IPX as well. However, it's less of an issue than it used to be: Novell partially fixed the problem by changing IPX in NetWare/IntranetWare 4.1. An addition to Novell's NetWare Core Protocol set, called the NetWare Link State Protocol, allows a server to establish workstation relationships sequentially across network interface cards (NIC) in the server. It does this by fooling workstations and spoofing media access control addresses. The result is a network card cluster in which driver software controls the specific card that workstations are allowed to connect to on the server. Workstations attach sequentially to the NICs, distributing work more equitably and increasing overall net throughput.

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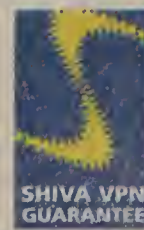
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Ethernet switch, each clustering product had no trouble keeping up with as many as four clustered 10Base-T network cards. This was not the case, however, with Fast Ethernet. The problem appears to be the way each product uses CPU cycles. With the addition of each new

NIC, we saw a drop in the amount of available CPU time under high network transmission loads through a Fast Ethernet switch. NIC Express typically used more CPU time than Balance Suite.

Although we couldn't saturate either test server's bus with four PCI half-

duplex Fast Ethernet NICs, it was possible to saturate the bus with just two Gigabit Ethernet NICs. That means bus saturation may keep Gigabit Ethernet networks from realizing the same level of throughput gains enjoyed by deploying multiple server adapters on Ether-

net and Fast Ethernet networks.

NSI's Balance Suite and IPMetrics' NIC Express do the job of adaptively increasing system throughput (as long as the server's internal PCI bus isn't saturated) while providing connection redundancy and failover fault tolerance. NIC Express is relatively new, while Balance Suite has been around for several years. The difference shows in the level of control, monitoring and dynamic balancing capabilities you get with Balance Suite. It's almost twice the price of NIC Express, but the older product's maturity makes the cost difference worthwhile.

*Henderson runs ExtremeLabs, a product testing and evaluation facility in Indianapolis. You can reach him at [thenderson@csi.com](mailto:thenderson@csi.com).*

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## NIC makers make it, too

**S**everal network card makers bundle their own balancing software with their products. Compaq and Standard Microsystems, among others, have balancing/failover software that works exclusively with their products. For this review, Compaq asked us to include its Compaq Redundant NIC Utility, Network Fault Tolerance and Adaptive Load Balancing products, but we declined because they work only with Compaq server hardware.

### How We Did It

We tested each product on two server platforms, a Compaq Proliant 3000R with a single 300-MHz Pentium II CPU and a Compaq Proliant 5000 with twin 200-MHz Pentium Pros. We used a variety of network cards, including Compaq NetFlex-3 and Netelligent, and 3Com 3C905B-TX. Our clients and servers were plugged into an SMC TigerSwitch 12-port crossbar switch and a Compaq Netelligent 5708TX eight-port dual-speed switch.

We ran simple concurrent file transfers via batch File Transfer Protocol and monitored throughput and performance with Triticom's LANDecoder32 and Windows NT's Performance Monitor.

To test fault tolerance, we simulated failure by pulling the cable from the network card and waiting until the management software detected the fault. We timed how quickly each package found a failed adapter when the server was under high-loading and quiescent conditions using LANDecoder32 to view packet traces. We also monitored SNMP traps through Triticom's RMONster.

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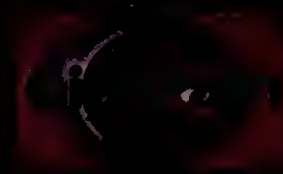




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# Management Strategies

## The show must go on

*CNN net managers deal with a pressure-cooker newsroom environment — with the world looking on.*

**C**able News Network broadcasts around the clock to 190 million households worldwide, so a network outage can spell global disaster for the media conglomerate.

"The anchors are relying on our technology to report their stories on the air," says Frank Janke, project manager for CNN News Systems Technology, the television network's IT service division.

Towering over the heart of downtown Atlanta, the CNN Center is home of the CNN News Group, built by the Turner Broadcasting System and now part of Time Warner. CNN, CNN International, CNN/SI Sports Illustrated, CNN En Español, Headline News and CNN Interactive all emanate from the South's news capital.

The CNN production facilities are a news and technology lover's amusement park. You'll find server banks and satellite farms, along with wall monitors displaying video and satellite feeds from legions of affiliates. A robotic camera in CNN/SI's New York office is controlled from Atlanta. With telephones to both ears, production staffers call out directions to cut between an anchor desk shot and a live remote feed, while coders enter real-time captions.

The Atlanta newsroom network serves 180 users, including scriptwriters, production staff and anchors, says Gina Gershon, director of news systems for CNN News Systems Technology. Cisco 2924 switches deliver Fast Ethernet to every desktop, allowing users to browse low-resolution video. The 2924s connect to a Cisco 5000 backbone switch.

Corporatewide applications run on the larger Turner network, which has built-in redundancy. Although both networks share the same back-

*By Loretta W. Principe*

bone, the newsroom network is protected from the rest of the WAN, says Scott Teissler, CNN's chief information officer. "You don't want ordinary things that go on computer networks affecting potential real-time broadcast operations," he

ally spots a severe problem before Gershon's department calls to report it. "We stay in contact with TTS and communicate the prognosis to the newsroom," she says.

Keeping in touch with the newsroom is a key part of the job because a partial outage causes panic there. "The users don't know what's broken and don't care. They just know they can't get to the network," Janke says.

Even minor incidents can disrupt production. "An anchor may inadvertently unplug a network jack and can't get to the newswriting software to write a script and print it," says Debbie Goldsmith, training manager for TTS.

Total network failures rarely happen, but when they do, the newsroom reverts to manual operations using typewriters, photocopiers and sneakernet, Gershon says.

While unexpected outages cause chaos, every organization — even CNN — has to have some downtime for systems maintenance. According to a carefully orchestrated plan, the TTS team performs patches, upgrades and storage migrations in the wee hours when the newsroom is slow and disruption is minimized.

"We work in the dead of night and overplan. We want to make darn sure that we never get into a corner when we take a system down," says Bernie Flank, director of systems operations for TTS. "We can't tell the customers the system will be back up in three hours and three hours later have no end in sight."

Teissler believes in the talent and commitment of his IT professionals. "These people are experts at being able to break and adapt the rules in an already demanding production environment during extraordinary situations," he says. He sees the News Systems Technology group as part of the news production team.

Whatever the department, working at CNN requires a certain attitude. Teissler looks for someone with a decent technical background who is fascinated by CNN. "You'd better love what you're doing because otherwise a news-person leads a miserable life," he says.

*Principe is a freelance writer and attorney in Springfield, Va. She can be reached at LWP@excite.com.*



THE STOCK ILLUSTRATION SOURCE

says. The news software is also configured with dedicated IP addresses to confine access to authorized clients only.

Several IT groups exist inside the CNN kingdom. Gershon's team works closely with the Turner Technology Services (TTS) team, which oversees the Turner network. TTS runs the help desk for all of CNN, receiving calls for help from bureaus around the world.

Together, TTS and News Systems Technology handle installation, maintenance and troubleshooting. TTS' system monitoring software usu-

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— Loretta W. Principe

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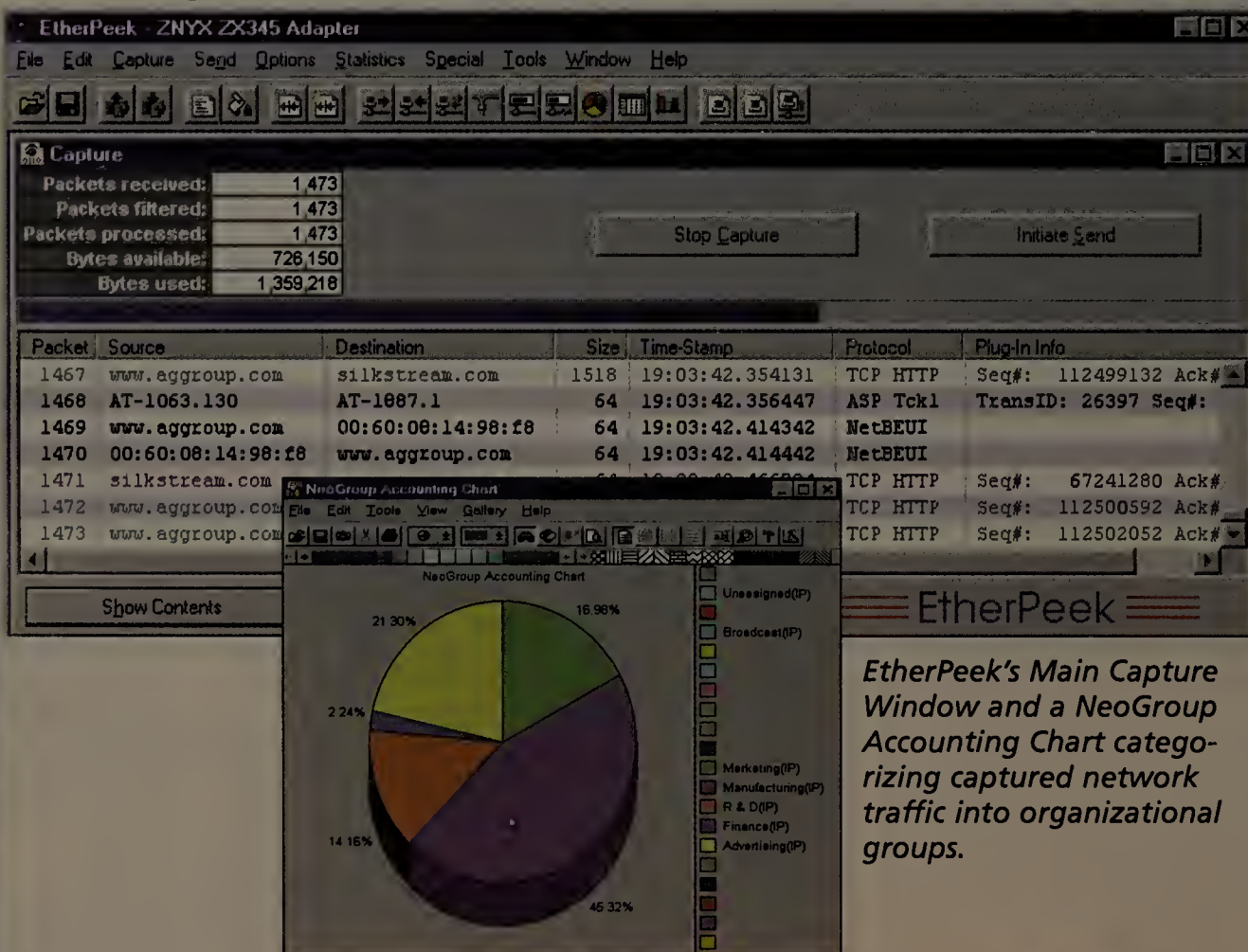
IntraPort allows you to create a Virtual Private Network (VPN) using the Internet to connect remote offices to a central database. For Heritage Broadcasting Group, owner of CBS affiliates in Northern Michigan, that meant remote and SOHO salespeople can send and receive data without long distance charges. Their phone bills went from an average \$400 per salesperson to just under \$20!

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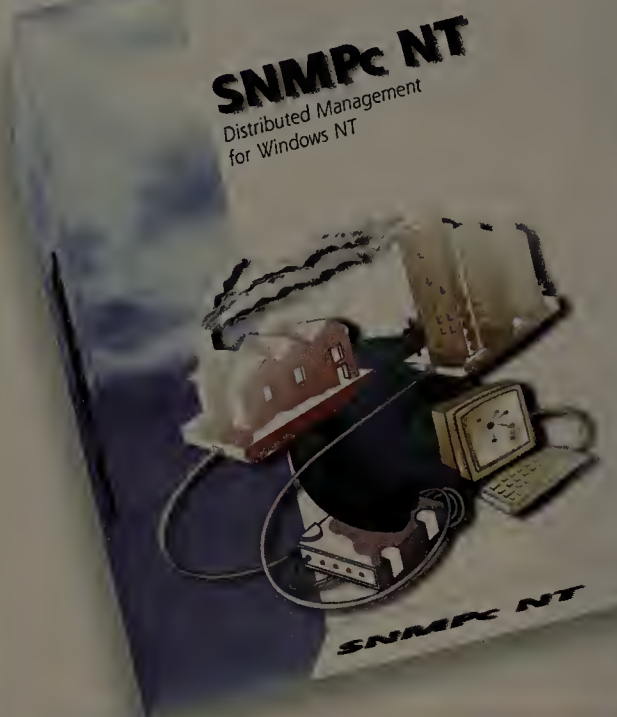
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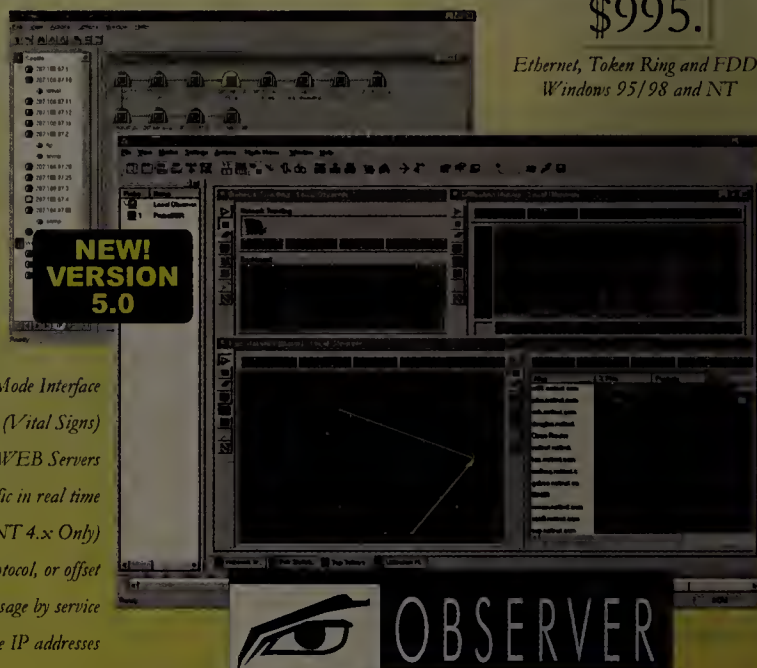
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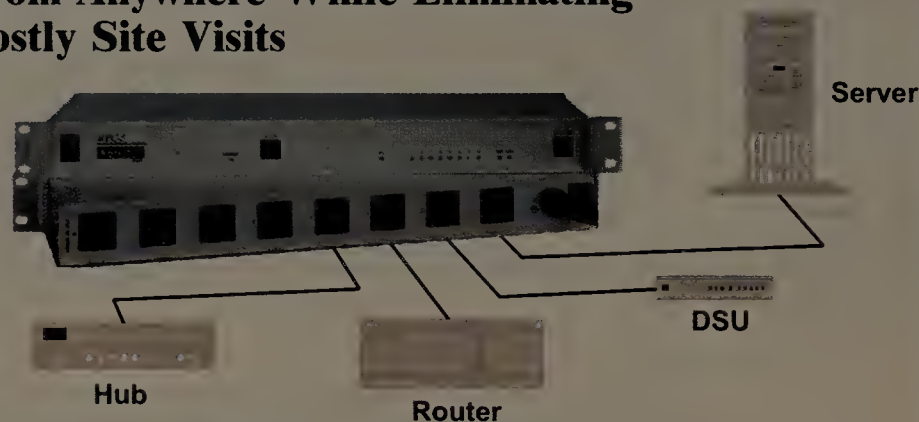
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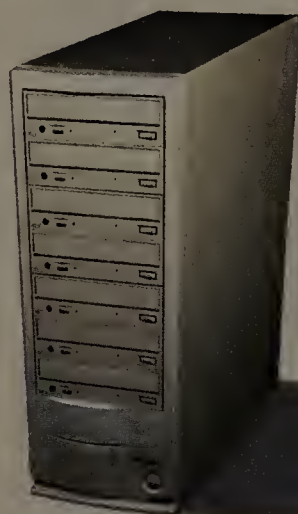
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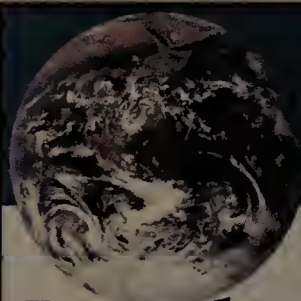
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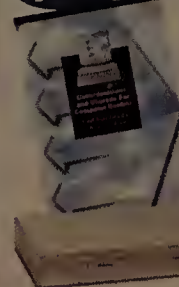
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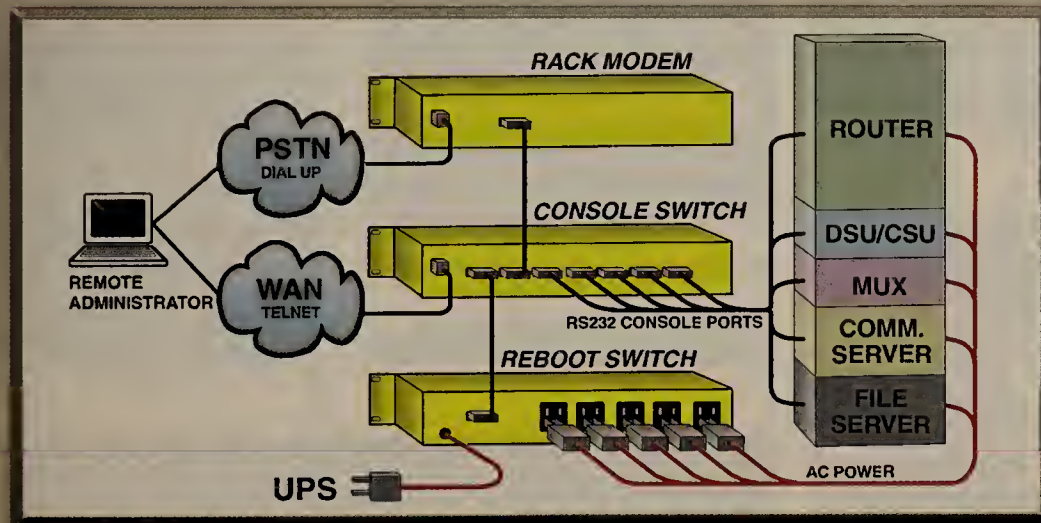
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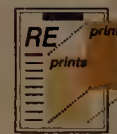
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# Cisco enhances 7200 router for voice

By Jim Duffy  
San Jose

The additions Cisco rolled out last week for its 7200 series router are designed to help users reduce telecommunication costs by running voice over router networks.

The extensions include a new 7200 chassis, a beefed-up processor, and voice and video integration capabilities. The enhancements help fill out Cisco's packetized voice arsenal, the chief component of which is a "network PBX" for campus multiservice networks that Cisco obtained from its acquisition of Selsius Systems.

A network PBX provides server call control and management over IP networks and serves as a gateway to analog, circuit-switched telephony gear.

JC Bradford, a Nashville, Tenn., investment bank, is saving \$150,000 per year with a campus multiservice network based on Cisco's LightStream 1010 ATM switches.

"You can't tell that it's not plain old telephone service," says Dean Qualls, network operations manager at JC Bradford.

Now Qualls can include his 7200 routers in this campus multiservice network scenario. New products and features for the 7200 include the four- and six-slot 7200VXR chassis, the NPE-300 processing engine and a technology called Multi-service Interchange that lets the router serve as a digital cross connect switch or add/drop multiplexer.

For the 7200VXR, Cisco enhanced the 7200 midplane,

which connects the port adapters to the NPE-300 processor. The VXR midplane provides up to 1G bit/sec of throughput and twice as much bandwidth as a standard 7200 midplane.

The NPE-300 provides a 50% increase in performance for the 7200, to 300,000 packet/sec. A Cisco 7200VXR equipped with an NPE-300 can support up to six port adapters and enable connectivity via Gigabit Ethernet and OC-12 ATM. In addition, the NPE-300 increases the amount of main memory to 256M bytes of SDRAM, double the limit of 128M bytes of DRAM on the NPE-200.

Park 'N View, which provides cable TV, telephone and Internet access to long-haul truckers, is using 7200s to deliver multi-service IP to 160 truck stops

across the country.

Voice quality on the router net is excellent, according to Steve Conkling, president and chief operating officer of the Fort Lauderdale, Fla., company.

"We spent a lot of time [on voice quality] because the delay problem in the 'Net and so forth can really impede the quality, but that's not been a problem we've run into," Conkling says. "In our system, you can't tell the difference between a normal phone and the one running over the Internet."

Cisco 7200 customer Tutor Time, a high-tech child care company in West Palm Beach, Fla., is saving money on distance learning applications by running voice over its data infrastructure.

"Generally, the long-distance traffic is from the remote centers back to corporate," says Todd Dion, vice president of technology at Tutor Time. "Those calls become free when they're traveling over our internal network."

The Cisco 7206VXR supports up to 48 Ethernet or serial — clear-channel or channelized — ports, 24 token-ring ports, 12 High Speed Serial Interface ports, and six Fast Ethernet or ATM ports. For multichannel networking in channelized T-1, E-1, T-3 or E-3 environments, the Cisco 7200 series VXR can support up to 48 channelized T-1s/E-1s and up to six channelized T-3s/E-3s.

The Cisco 7200 series VXR will be available in December with pricing starting at \$14,000. The NPE-300 will also be available in December and will cost \$7,500.

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## MCI WorldCom

Continued from page 1

has confirmed it will discontinue production of the BayStream line, which is based on Bay's Backbone Concentrator Node routers. Regardless, MCI WorldCom will continue to work with Bay on its frame relay network, a spokeswoman says.

Carl Baptiste, Nortel's router platform product line manager, says the company will still support existing BayStream customers — which include Bell Canada and Concert — but Nortel Passport is the company's carrier data platform of choice. The Bay products will be used as edge devices on large enterprise networks.

Some experts believe the Ascend contract was in the works prior to WorldCom's acquisition of MCI and Nortel's acquisition of Bay. But whether the deal was born out of necessity or desire, users and analysts agree the change can be positive, if done correctly.

Ascend's ability to extend service-quality guarantees from its ATM backbone to the frame relay services supported by the CBX 500 may mean more service-quality options, according to MCI WorldCom customer Ken Lund, network manager for Allen Lund transportation brokers in La Canada, Calif.

"This shows a commitment

to using frame relay in conjunction with ATM to improve the quality of frame," Lund says. The MCI WorldCom frame relay service Lund has been using for four years has performed well, and he even uses it to support voice, he says.

MCI WorldCom hasn't been lagging behind with its frame relay offerings. In fact, MCI WorldCom was the first and only carrier to offer switched virtual circuits. But users and analysts agree that a switching platform, not a routing platform, will offer more flexibility and reliability.

Ascend's CBX 500 will give MCI WorldCom the option to do ATM trunking while continuing to offer frame relay. "The company will get more robust quality of service from the CBX 500 portion of the network, and the voice capabilities of that platform are a lot stronger than the Bay platform," says Tim Smith, principal WAN analyst at Dataquest.

For Bruce Friedman, network manager at Morrison and Forrester, a law firm in Palo Alto, Calif., the possibility of moving to Ascend is attractive. Potentially, MCI WorldCom could offer service-level guarantees that would allow the law firm to do more than the current voice and data over frame relay.

"The next thing you would want to say is, 'Can I do video?' I can see that being intriguing," Friedman says.

### Out with the old, in with the new?

**MCI WorldCom is said to be signing a \$50 million deal with Ascend for a raft of equipment that will be used to bolster the carrier's frame relay network. It is unclear if MCI WorldCom will phase out the Nortel BayStream gear currently used.**

Old: Bay's Backbone Concentrator Node



New: Ascend's CBX 500 Frame Relay switch



He had toyed with using ATM to handle multimedia traffic, but says if it could all be done over frame relay, he would jump at it.

One customer concern when a carrier attempts such a wholesale upgrade is billing.

"Customers will have to watch and make sure they are getting the same service levels they were getting before," says Rick Malone, a principal at the Dedham, Mass., consulting firm Vertical Systems Group. "Because frames move through the network differently if you're using Bay, Ascend or Cisco, users really have to keep an eye on billing," he says.

Swapping out old equipment or supplementing a legacy data network is not an easy task, but

it can be done. Just ask AT&T and Sprint.

In mid-1996, AT&T upgraded its backbone from Cisco's first-generation StrataCom IPX frame relay switches to broadband StrataCom BPX switches to support interoffice trunking at T-3 rather than T-1 speeds via ATM.

AT&T decided to bite the bullet and move all its customers' ports to the BPX switches. But to ensure no customer traffic got lost in the shuffle, for two weeks AT&T duplicated every packet and ran two networks. Doing that provided the BPX with a real, production-level stress test for each customer's WAN.

"AT&T had some scheduling issues, but everybody

came out whole in the end," Malone says.

By contrast, when Sprint last year installed new Nortel frame relay/ATM switches, the company created a parallel network next to its original Alcatel Data Networks backbone and made customer migration optional.

The main advantage of Sprint's Nortel network is that it provides class-of-service differentiation, which lets the carrier offer lower latency guarantees for SNA traffic. This capability is not available to customers that are on Sprint's legacy Alcatel frame relay network.

All new customers get Nortel ports, and some 75 existing customers chose migration to better their guaranteed service levels, says Brad Hokamp, Sprint's director of advanced data services.

But the key reason Sprint was able to keep two networks going is that Alcatel agreed to maintain and upgrade the older Sprint network.

MCI WorldCom may follow Sprint's model because Nortel is saying it will continue support of its BayStream product line. While new BayStream frame relay switches will not be available to customers, Nortel will support existing BayStream users for at least five years and longer in some cases, says Mark Tharby, vice president of product marketing at Nortel. ■



## MPLS

Continued from page 1

The Internet community has to decide how it's going to responsibly address patented technology," Tavs says.

"Our intent is not to delay deployment of MPLS products," he adds. "It's only to raise the awareness of possible infringement."

## Sharp criticism voiced

Critics say IBM's stance flies in the face of the open standards process.

"I will not be paying any money to IBM," says Hemant Kanakia, CEO of router start-up Torrent Networking Technologies in Silver Spring, Md. "We can develop whatever technology we need ourselves."

"MPLS is supposed to be a

networkwide standard," he adds. "As soon as a company starts charging money for it, the standard is dirt and people will stop using it."

Tavs would not disclose how much IBM will charge or what specific technology falls under the company's pending patents.

The company's Aggregate Route-based IP Switching (ARIS) technology is part of the specification, along with Cisco's Tag Switching technology. Cisco, however, is not charging anything for its contributions.

IETF Chairman Fred Baker says patent claims are not new to

the IETF, and that a company only has to disclose the fact that it has filed for patents or holds them to be in compliance with the standards process.

## Move could backfire

"Intellectual property in its own right is not a problem," Baker says. But by complicating a standard, the company may force implementers to seek alternative methods for carrying out the specification, he says. "If there are two equal technologies, they will go for the unencumbered one."

"If IBM puts too high a price on the license, then it could affect MPLS implementation," says Atul Kapoor, managing director of The Tolly Group, a testing and research firm in Manasquan, N.J. "Even if it's a small amount, it could start adding up on a large number of pieces of equipment."

Kapoor says Cisco's Tag Switching and IBM's ARIS are not interchangeable. "Tag Switching maps labels to packets; ARIS provides route aggregation. An MPLS implementation would be lacking without route aggregation," he says.

Tom Downey, Cisco's director of product marketing for the Enterprise WAN business unit, says IBM's patent claims are part of the IBM's "Old World" attitude. "In the New World of networking, patents are there to horse trade and cross-license, not to make money."

## May hurt start-ups

He adds that the smaller vendors — the start-ups — are going to be the ones affected because the larger vendors can just swap patents with IBM.

"If you are a small company, you are not going to pay a lot for a patent — because you can't," agrees Tony Rybczynski, director of strategic marketing and technologies at Nortel Networks.

One way that the start-ups can offset the cost of patents is to charge more for their products.

"Depending on the price that IBM is socking vendors with, users will see it in the price of equipment," says Mel Beckman, chief technology officer for the Systems and Software Consortium, an ISP in Santa Barbara, Calif.

Beckman says he already has to pay an extra 7% more for his Cisco routers with SNA capabilities because Cisco licenses SNA from IBM.

Beckman adds that he believes IBM is going against the nature of open standards. "Vendors bring their technology to the table to promulgate standards for interoperability, not to feather their nests," he says. "I'd be worried about standards that could get set and then vendors get the money for it. Proprietary interests stifle innovation. It's not healthy for the open standards process."

Kanakia says IBM is doing

**"I will not be paying any money to IBM . . . As soon as a company starts charging money for a standard, the standard is dirt and people will stop using it."**

Hemant Kanakia, CEO, Torrent Networking Technologies



## Extreme

Continued from page 1

Networks (now a division of Nortel Networks) introduced the BayStack 450 in July, Cabletron announced the SmartSwitch Router 2000 in September, and Cisco unveiled the 2926G switch last month.

Like most desktop switches, these devices typically have a fixed number of ports. But they also boast some sort of priority queuing or quality-of-service (QoS) mechanism, load sharing and Layer 3 switching capabilities.

In April, Extreme introduced its first switch in this category, the Summit48, and the upcoming Summit24 is simply a version of the Summit48 with 24 ports of 10/100M bit/sec Ethernet instead of 48. The new stackable offering also has a Gigabit Ethernet uplink to connect to a backbone network.

Lightpoint Entertainment is using the Summit24's 48-port big brother to connect approximately 40 Silicon Graphics workstations and servers, says Chip Ray, CGI systems specialist at the Orlando, Fla., company.

All the graphics the company creates are stored on a central server that can hold 300G bytes, and the workstations access it over the network. Because the switch operates at wire-speed, "users get the feeling that the data is stored locally," Ray says.

Ray adds that the Extreme

device's manageability is a key to its value.

For example, Lightpoint can use the Summit48 to assign file transfers a higher priority through the switch than Web traffic or shared whiteboard applications. The management features let Ray track utilization, assign virtual LANs and adjust QoS levels.

While such functions are available on chassis-based switches, the cost is much high-

SNMP management and QoS.

"This is typically stuff you find in the high end, but users are starting to ask for it at the workgroup level," McConnell says. In backbone switches, the demand is for high capacity and redundancy, he adds.

Advanced capabilities at the desktop switch level will lay the groundwork for new network schemes in the future, says Ron Westfall, an analyst at Current Analysis in Sterling, Va. "To enforce policy-based management throughout an architecture, you would need Layer 3 functionality integrated onto your LAN switch."

Layer 3 capabilities at the edge also mean less Layer 3 traffic weighing down the uplinks, notes George Prodan, Extreme's vice president of marketing.

Extreme developed the Summit24 because many customers don't need or want to pay for a full 48 ports, he says.

As LAN switches continue to reinforce their commodity status, more functions will be standard on low-cost devices, McConnell says. "The prices are so compelling that users can get it all."

The Summit24 is shipping now.

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## Closer to home

**Extreme's Summit24 fits into an emerging category of desktop switches that features chassis-style characteristics, including:**

- Layer 3 switching
- Traffic prioritization and quality of service
- Load sharing among uplinks
- Management capabilities

er, Ray says. The Summit24 will cost \$5,495 for Layer 2 and \$9,495 for Layer 3 functions. By comparison, Extreme's BlackDiamond chassis starts at \$15,995.

## Filtering down

Users are starting to look for rich functions at the network edge, says Mike McConnell, director of enterprise management and LAN programs at Infonetics Research in San Jose, Calif.

A recent Infonetics survey showed that the features most important to network managers in workgroup switches include

**"The IETF will have to get used to patented technology . . . As long as patents are legal in the U.S. and networks are important to business, then patents will play an important role in the standards process."**

John Tavs, TCP/IP technology manager for IBM.

itself harm by putting up roadblocks. "I'd be very surprised if anything proprietary to IBM makes it into the final spec."

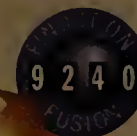
"To put something out as a standard, you should understand that you'll get the credit, but you give up your proprietary rights," Beckman says.

IBM representatives say the company has patents pending for other technologies as well, including the Open Shortest Path First Protocol and the Virtual Router Redundancy Protocol. ■

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## Linux

Continued from page 1

of its stability, scalability and flexibility. The Linux shareware development model is also attracting a growing body of admirers with its free open source code, which is backed by a loosely knit army of developers who contribute gratis upgrades and bug fixes. Any holes in this fabric, Linux fans insist, are being filled rapidly by makers of commercial Linux products, such as Red Hat Software and Caldera Systems.

However, the skeptics believe that only fools rush in to a bet-your-business relationship with an operating system that is still primarily controlled and supported by its user community — no matter how skilled and committed that community is — instead of going with a brand-name vendor with a proven track record.

"I believe Linux to be a very robust and stable operating system, and I have a lot of fun using it," says Frank Buechler, a network administrator for a large manufacturing company in Elmira, N.Y. "However, I do not believe it will be seeing the light of day in the corporate environment any time soon."

Buechler cites a common complaint about Linux as a major basis of his skepticism. "Linux is still a geeks' operating system, one which takes a fair amount of knowledge to configure and maintain," he says.

Accessing that knowledge can be a challenge, according to the skeptics. While technical support from commercial vendors is becoming more prevalent, Internet news-

groups remain the most common troubleshooting tool for Linux users. This works just fine, say fans of the operating system, but not everyone agrees.

"Linux won't work in the business community until a central site is created for tech support issues," contends David Cole, a technical systems specialist from Stillwater, Minn. "No business in this country is going to wait for a 17-year-old beatnik to [answer its newsgroup post and] fix its problem."

Cole also believes that any branded Linux operating system that gains mass acceptance will require a graphical user interface (GUI) that can rival those of Windows and Macintosh. Though a common complaint among the skeptics, this opinion annoys Linux purists, who argue that the system's superior capabilities are well worth forgoing a user-friendly GUI in favor of a tried-and-true command line.

Some GUIs are already available for Linux-based products and more are on the horizon, notes Paul McNamara, vice president of enterprise computing at Red Hat.

"Usability is a function of the market you're playing into," McNamara says. "Right now our focus is on the server, where most administrators are serious computer professionals, [the types who], even if they're using NT, have turned off the GUI."

It's estimated that up to 120,000 developers are actively involved in advancing just the Linux kernel. "We think the reason Linux has gone so far so fast is because fundamentally this model delivers better technology," McNamara says.



## Big-time possibility

Again, the question is not whether Linux has a loyal following and a viable future, but whether it will blossom into a big-time corporate player. Lotus is among the vendors looking at Linux, and executives at the Cambridge, Mass., maker of Notes and Domino say they remain unconvinced on that point.

"We're not willing to make a business commitment to Linux yet because a lot of the information about it is hype," says Cliff Reeves, vice president of communications product management at Lotus. "It's not yet reality in terms of its business adoption."



**"The people making a market for Linux today are too glibly adopting [Oracle CEO] Larry Ellison's sort of 'screw Microsoft' role, which has nothing to do with customers."**

Cliff Reeves, vice president of communications product management, Lotus

The case for Linux, namely greater stability and flexibility through shareware and open source code, has yet to be documented to Reeves' satisfaction.

"The people making a market for Linux today are too glibly adopting [Oracle CEO] Larry Ellison's sort of 'screw Microsoft' role, which has nothing to do with customers," Reeves says. "It's like preaching against the great Satan."

If deemed desirable, however, porting Lotus products to Linux "would be very easy for us," he says. "It's yet another Unix; we're on three of them already."

Would-be Linux customers and industry experts also have other questions.

"Will the Linux community be supportive of 5-year-old hardware driver problems?" asks Tom Connors, a senior member of the technical staff at Texas Instruments in Attleboro, Mass. "Will they embrace new hardware quickly enough and the permutations of systems and devices?"

"Though it's working well now, I'm not sure Linux will scale to the mass market," he adds.

The absence of predictability may also prove to be problematic, some say.

"From a corporate comput-

pleasant experience dealing with it. Mitchell Regenbogen, a 15-year computer buff and lawyer for the city of New York, decided to give Linux a try awhile ago with an eye toward deploying the operating system in his law office.

"I concluded that more stable or not, more features or not, I'd have to devote the equivalent of either a full-time job or all of my spare time to Linux to get to where I was with Windows 3.1 five years ago," Regenbogen says. "Given the choice of changing my life for Linux or giving up, I gave up."

After sharing that story on a Linux newsgroup, Regenbogen incurred the wrath of a few Linux loyalists who accused him of simply lacking the will to learn. Warranted or not, that type of reaction is cited by Linux critics who contend that some within the Linux community are rude to new users, if not downright hostile.

It's just a few bad apples, insist the more temperate Linux fans. Rather than reflecting poorly on their favorite operating system, the complaints about learning curves, usability and support merely show that Linux isn't for everyone, insist the true believers.

The Linux cynics, of course, say that's exactly their point.

*Editor's note: Network World's Paul McNamara and Red Hat's Paul McNamara are neither the same person nor related.*

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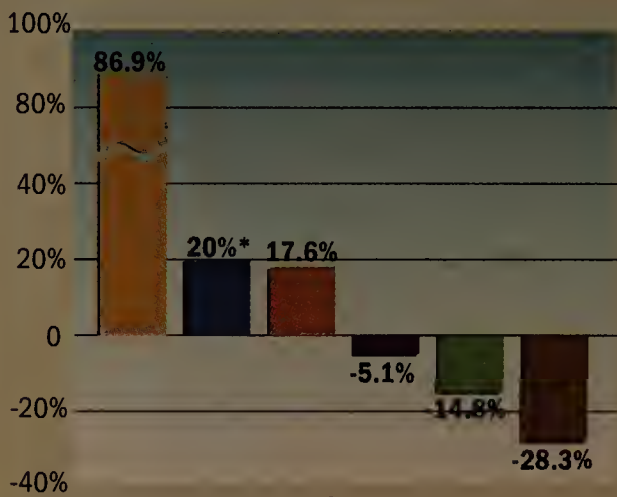


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## THE LOW-DOWN ON LINUX

Linux shipments grew last year. In 1997, 4.1 million network operating system licenses were shipped worldwide, and only Windows NT Server shipments grew faster than those for Linux. But Linux's share of worldwide NOS shipments was still fairly small.



Percentage of growth from 1996 to 1997.

\* Linux shipments only include paid licenses.

SOURCE: IDC, FRAMINGHAM, MASS.

## KEY:

- Combined Unix
- Linux
- NetWare 3.X and 4.X
- OS/2
- Other NOSes
- Windows NT Server



Linux's share of worldwide shipments.



## Airing your dirty little secrets

**W**ay back in October (Oct. 5 to be exact) I wrote a column "The 'Net as a propaganda machine" ([www.nwfusion.com/forum/1005gibbs.html](http://www.nwfusion.com/forum/1005gibbs.html)), in which I discussed how the Internet community is as willing to distribute fiction as it is to distribute fact.

Add a hint of salaciousness and you'll really see the Internet in action. This means that if any of your dirty little secrets get out, containing the damage is extraordinarily difficult.

The trouble is it is one thing to have your peccadilloes exposed and quite another to have everyone and his brother comment about them in what is effectively a public forum. Worse still, the Internet makes the consequences of exposure of even trivial indiscretions far greater than any other medium.

Consider the case of radio pundit Dr. Laura Schlessinger. If you haven't heard the good doctor on the radio, she does a call-in agony show that is hugely popular (she beats Rush Limbaugh's ratings). Her Web site is [www.drlaura.com](http://www.drlaura.com).

While I think she often gives out good advice, she has recently become rather self-righteously religious. She has also become somewhat brutal in her treatment of callers over the past couple of years, upbraiding them in no uncertain terms for their amazingly bad judgment (she should be kinder to them . . . after all, how bright can they be calling into a radio show and airing their problems in public? And without them, there's no show. . . . On the other hand, perhaps they all have masochistic streaks and actually enjoy the treatment).

It turns out that in her late 20s, Dr. Laura allowed her boyfriend to take nude photos of her. Unfortunately for Dr. Laura, her now very ex-boyfriend kept the photos and recently, in exchange for large amounts of

money, sold the pictures to a company called the Internet Entertainment Group (IEG). IEG immediately put them on the World Wide Web.

Initially, Dr. Laura apparently denied the existence of the photos (according to the newsgroup [alt.radio.talkdr-laura](mailto:alt.radio.talkdr-laura)) but later owned

up to the fact. The problem for Dr. Laura is that her current, rather strict, ethical position is being publicly contrasted with her past behavior — never mind that she was younger and less wise then.

The last installment of the story had Dr. Laura

going to court (curiously at the same time as Pamela Anderson Lee) for a restraining order against IEG displaying the photos (Ms. Lee was trying to block IEG's distribution of her honeymoon video).

Dr. Laura failed (as did Ms. Lee) for the simple reason that given the scope of the distribution of hundreds of thousands of copies over scores of Web sites, the judge considered a restraining order to be pointless.

But by doing so, the judge has allowed IEG to continue profiting from the photographs. Doesn't that seem wrong to you? If IEG was adjudged to have acted improperly, then it should be constrained to desist on principle — never mind that many other sites have hijacked the same content.

Dr. Laura will probably brush this problem aside with little consequence other than embarrassment and large legal bills, but the point is that once again, the Internet changes everything. Could we be entering an era in which public figures will have no choice but to be more discrete and more honest? After all, there's no chance that we, the public on the Internet, will stop being interested in their dirty little secrets.

Dirty laundry to [nwcolumn@gibbs.com](mailto:nwcolumn@gibbs.com) or (800) 622-1108, Ext. 7504.



## 'NET BUZZ

The latest on the Internet/intranet industry

**I HEAR THEY'RE HIRING AT MCDONALD'S** Like you, I believed all the hype.

Quarter after quarter for the past two years, we've heard about the record amount of money flowing into Internet and other network-related start-ups from the coffers of high-flying venture capitalists.

To the rest of us, the venture capitalists are the glamour gods of the high-tech industry. Like Dorothy seeking an audience with the Wizard of Oz, hundreds of entrepreneurs routinely grovel before the mighty venture capitalists for cash so their fledgling companies can stay in business long enough to be bought by Microsoft or Cisco.

"What a life," I often thought. "Getting rich while making someone else's dreams come true. Better yet, getting rich while destroying someone else's dreams. Either way, it sure beats the hell out of hurling meaningless verbal brickbats and crafting pointless witticisms."

Now a recent survey reveals the sad truth: The venture capitalists we've so long envied and admired have been living a private hell, too proud to let the rest of the world know that their Sand Hill Road empire is but a Potemkin Village of prosperity.

According to Boston consulting group William M. Mercer, the average total compensation of top partners in venture capital and other private investment firms dropped from \$3.5 million in 1996 to a paltry \$2.9 million last year.

Good thing those buildings in Menlo Park are only a couple of stories tall.

The reason for this 17% plunge, Mercer says, is long-term gains from cashouts were lower in '97 than in the previous year, when the first wave of Internet investment fever swept through the land.

**BRENTWOOD'S BIG VENTURE FUND** And yet the brave venture capitalists march on. Take Brentwood Venture Partners, which last week announced a new \$300 million fund, the largest venture fund the company has raised since its founding in 1972.

Brentwood, which focuses on the information technology and health care industries, was the leading investor in early-stage start-ups during this year's second quarter, according to the latest PricewaterhouseCoopers Moneytree Survey.

Brentwood has been an early backer of some high-profile firms such as Apple, Wellfleet Communications, Xylan, Documentum and WebTV. General Partner John Walecka says Brentwood will use the new fund to continue "investing in the companies that are building the core elements of the next-generation network."

Walecka also revealed Brentwood is now wrapping up a \$35 million to \$40 million investment in Internet Access Financial Corp. (IAFC), which in February launched NextCard Visa, a 'Net credit card. Among the other investors is Kleiner Perkins Caufield & Byers.

Based in San Francisco, IAFC was founded by a team of executives from Providian Financial Corp.

"Credit cards over the Internet is its first product line, but what it ultimately wants to do is build a complete online banking company," Walecka says.

But what about the plunge in average compensation for venture capitalists? How could Walecka maintain his upbeat demeanor in the face of such a financial comedown?

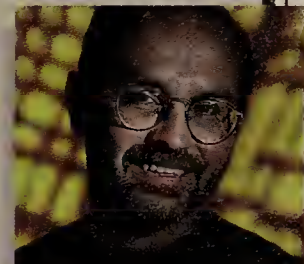
"I certainly haven't seen that problem," he laughs.

Is he out looking for a second job or anything?

"No, I'm still working hard here," Walecka says.

Such pluckiness is admirable. Godspeed, John Walecka.

Down to your last few million? Buck up and send 'Net Buzz your best Internet- and intranet-related news, gossip and rumors. It won't reverse your declining financial fortunes, but at least it will make you feel as if you're contributing something. Contact Chris Nerney at (508) 820-7451 or [cnerny@nww.com](mailto:cnerny@nww.com).



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